Stripes

- An exploration of hand weaving and accessory design

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2020

Master of Arts Thesis
Fashion, Clothing and Textile Design
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Aalto University

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Abstract

The thesis examines questions aroused by a trip to China in spring 2019, is everything going too fast? Should we slow down a bit? During this trip, I saw the fast urbanization city scene and the fast-produced products in local shops. On the contrary, I also encountered the peaceful Chinese gardens and the local handwoven fabrics. These local crafts resonate with my previous experience working for a luxury brand, which focuses on craftsmanship in design. This project explores the responsibility and role of a designer in this fast world, and hopefully, the questions, “Is everything going too fast? Should we slow down a bit?”, would be answered through the process.

The final results of the project are a woven textile collection and an accessory collection where tex-tiles are applied. For the textile collection, the research question is, how to design a woven textile collection that reflects the traditional Chinese garden scene. Furthermore, handweaving techniques and striped fabrics are explored. The accessory collection researches how to apply the woven textile to everyday life products, reflecting the contrasting life between the fast urbanization city and the traditional Chinese garden, encouraging people to reconsider the speed of current life.

The following research methods are used: literature review, field trip and prototyping. The study on the hand weaving technique, the striped textile history and the Chinese garden history are conducted through literature review. The Chinese garden scene is observed and researched through field trips. The final textile and accessory collection are achieved by prototyping.

The final results demonstrate one example of reflecting the Chinese garden scene through the woven textile, tackling the contrasting fast urbanization phenomenon through the accessories. It also shows one possibility of combing hand weaving with accessory design, bringing traditional crafts to current everyday life. Hand weaving could be one way of slowing down our fast life.

Thank you,

Maarit Salolainen
Hilkka-Maija Fagerlund
Marine Nallet

Tiina Saivo
Helmi Liikanen

Mika Roine

Angela Hernandez

Friends & Family

Contents

Chapter 1

Introduction

This project questions the speed of our current life. It examines the responsibility and role of the designer in this fast world. This project focused on woven textile design and accessory (bag) design for everyday life. It addresses the importance of slowing down by exploring hand weaving and accessory design.

1.1 Motivation and goals

The motivation came from my observations during a trip to China; the contrasting scene between traditional Chinese gardens and fast urbanization. The Chinese garden demonstrated a slow and balanced life between nature and human beings. On the contrary, the fast urbanization and mass-produced products showed an opposing side. This project aims to reflect this contrasting fast-paced / slow-paced phenomenon through textile and accessory design, addressing the problems of speeding up, providing solutions for slowing down.

Furthermore, this project tackles the importance of craftsmanship in the current world. On account of my previous internship experience at Hermès, a luxury brand that focuses on craftsmanship in design, combined with my passion for hand weaving, this project explores the hand weaving technique in textile and accessory design. It explores the hand weaving technique as a source of inspiration, prototyping method and possible production method of the final products. In the current fast world, we are losing the ability to make things by hand. Few people know the knowledge of weave. Hopefully this project will also serve to arouse more people's interest in hand weaving. During my trip to China, I encountered the beautiful striped hand-woven fabrics. Striped fabric is timeless and essential. It is the simple results of the loom mechanism and the woven structure. Throughout history, the striped cloth can be seen in different cultures all over the world. To remind people to slow down, I question what today's stripe could be. This project aims to introduce an additional layer to the story of stripe by reflecting the traditional Chinese garden scenes through a woven textile collection.

1.2 Research question and objectives

In addressing this thesis topic, I aim to answer the following main research question:

> *How to design a collection of woven fabrics to apply as material for a collection of everyday bags which will reflect the contrasting lifestyle between the urbanized city and the traditional Chinese garden?*

To be able to fully answer this question, also following sub-questions are studied:

> *How to use hand weaving as inspiration and as a method for making in textile and accessory design?*
>
> *What are the fundamental principles of the simplest woven structure known as plain weave, and how can it be applied in striped woven fabrics?*
>
> *What are the elements of the traditional Chinese garden, and how can they be translated into woven fabrics?*

The practice of this project examines how to apply the hand-woven fabrics into an everyday life bag collection, which will reflect the contrasting lifestyle between the fast urbanized city and the traditional Chinese garden, in turn, encouraging people to reconsider the fast speed lifestyle. The outcomes are a woven textile collection and accessory (bag) collection wherein the fabrics are applied. The textile collection consists of five different pieces of striped hand-woven fabrics. Each fabric represents one element or scenery from the Chinese garden. The bag collection consists of five different bags wherein each of the striped fabric was applied.

This project is positioned under the woven textile design and accessory design for everyday life. It tackles the need for “slow making” in today’s fashion industry. “The fashion industry is the second largest industrial polluter after aviation...” (Niinimaki et al., 2020). This is mainly caused by the growing consumption of fast fashion. All the environmental issues caused by fast fashion urges us to change. The fundamental changes should be made in the fashion industry, including “a deceleration of manufacturing and the introduction of sustainable practices throughout the supply chain, as well a shift in consumer behaviour...” (ibid.). Furthermore, the trend forecaster Li Edelkoort (2020) addressed the need for new ideas of making and producing that focus on slower, less, and more essential. This project contributes to one of the ideas for slowing down.

1.3 Methods

This project uses the following methods: literature review, field trip, and prototyping.

Hand weaving is strongly connected to the loom mechanism. The loom has many thousand years of history, and different types of looms were developed throughout time including the warp-weighted loom, the backstrap loom, and the treadle loom to name a few. These different types of looms were researched through literature review. The striped woven fabric is such a basic and universal textile that can be found in different cultures all over the world. Through literature review, I "traveled" in time to different parts of the world to study the striped fabric stories: The negative stripes spanning the 13th – 16th centuries in Europe, the Basque country linen, the Kente cloth from Ghana and the striped cloth from my hometown. These different striped fabric stories were the inspiration for designing the woven fabric for the accessory collection.

The Chinese garden has a long history which can be traced back to a few thousand years ago. Throughout history, different types of Chinese gardens were developed, and these gardens shared common scenery with hills and ponds, a harmony between natural charm and manmade architecture (Chen, 2018). In this project, the Chinese gardens refer to residential private gardens in Southern China. The literature review method was conducted for researching the history of the Chinese garden. Furthermore, the traditional Chinese garden scenes were researched through field trips. In October 2019, I visited two traditional gardens, Cang Lang Ting and Yi Pu in Suzhou, southern China. I observed different elements and sceneries in these gardens during the field trips.

The outcomes - the woven fabrics and the accessory collection were achieved by prototyping. For the woven fabrics, different materials and structures were explored intuitively from the loom in the beginning. After the exploration, the desired swatches were developed to reflect the Chinese garden scenes. The final fabrics were hand-woven by me in the weaving studio at Aalto University. Furthermore, inspired by the essential, anonymous characters of the fast-produced shopping bags, the final accessory collection was delivered through prototyping.

Among the previous thesis project in Aalto University, I did not find the thesis work which is exactly about combining woven textiles with everyday life bags. However, there are projects related to hand weaving. For example, Helmi Liikanen's project (2019) is about embodied thinking in the hand weaving process. In her research, she explored "hand weaving as a platform for intuitive, embodied thinking in the field of textile design".

1.4 Content of the thesis

The thesis consists of 7 chapters, each of which are briefly described as follows:

Chapter 1 introduces this project.

Chapter 2 describes my personal trip to China, which is the inspiration and motivation of this thesis project. During this trip, I encountered a “slow” scene: the striped bedlinen handwoven by my cousin, the weaving shop in my hometown which provides looms for hand weaving and the beautiful traditional Chinese garden Xi Ling Art Society. However, the “fast” scene of the trip offered the opposite experiences: the massive high-rise buildings and the local shop with fast-produced bags. These contrasting scenes evoked the question about speed up / slow down and questioned the role and responsibility as a designer in this fast world. After the trip, inspired by the hand-woven striped bedlinen and the fast-produced bag, an exploration of hand weaving and accessory design started.

Chapter 3 focuses on the background study of the loom, plain weave, and stripes in textiles. Firstly, some of the looms developed through history from different parts of the world and cultures were studied at the beginning of this chapter. Secondly, the fundamental woven structure plain weave was introduced. Lastly, I studied some of the stripes in textiles in time from different cultures. The different stories behind these striped textiles were documented and became the inspiration for the design process.

Chapter 4 introduces the background study of the traditional Chinese garden. A brief history of the traditional Chinese garden was documented at the beginning of the chapter. Further, to research more about the traditional Chinese garden scenes, I traveled to some of the gardens in China. The field trips to two gardens were documented. In the end, different elements in these gardens were examined and studied.

Chapter 5 documents the design process of the fabric part. The textile collection aimed to reflect the traditional Chinese garden scenes through striped hand-woven fabrics. At the beginning of the design process, I explored different materials and structures on the loom intuitively. Some of the most promising swatches were documented at the beginning of this chapter. Furthermore, the mood board of the textile collection design was introduced, and it reflected the traditional Chinese garden scene. The color and material choice for the final collection was selected and documented, as well as the final stripe design. At the end of this chapter, the prototyping process and the final textile collection outcome are presented.

Chapter 6 documents the design process of the accessory collection. As inspiration, the fast-produced shopping bags were examined in the beginning. The essential, anonymous qualities of these fast-produced shopping bags led me to start the design and prototyping process. The final presentation of the bags is shown at the end of this chapter.

Chapter 7 concludes the project. It examines the outcome of this project and provides the future direction for development.

Chapter 2.

A trip to China

- motivation and inspiration of the project

This chapter describes the motivation and inspiration of the project. The motivation and inspiration came from the observations and thoughts during a trip to China in the Spring of 2019. It reflected the contrasting scenes between speed up and slow down. During this trip, I saw the fast urbanization city scene and the fast-produced products in local shops. On the contrary, I also encountered the local hand-woven fabric and the peaceful Chinese garden. These experiences became the starting point of this thesis project.

2.1 The hand-woven striped bed sheets

The starting point of the project can be traced back to a piece of striped bed sheet at my parents' home in China. During the Chinese New Year holiday, in February 2019, I travelled to my hometown Xinxiang, which is located in the middle region of China. One morning during the trip, I walked into my parents' bedroom to pick up some stuff. The striped sheet on their bed caught my attention immediately. The color. The rhythm. The texture. Later on, my mother told me that the sheet was a gift, hand-woven by my cousin. My mother opened one wardrobe in her bedroom and took out a huge bag filled with striped sheets, all of which were hand-woven by my cousin (Figure 2-1)!

It was a special moment, my mother and I sitting on the bed, flipping through the striped sheets in the bag. "There is also a bed sheet she wove for you," my mother said, "she used 10 different colored yarns for this sheet. She said 10 colored yarns would bring you good luck!" I took this special sheet from her hand. The sheet was nicely folded and a bit heavy. While holding the fabric in my hands, I could imagine the hours she spent in weaving this fabric. She wove her good wishes into the fabric, from thread to thread. This fabric was a media between my cousin and me, bringing the message from her to me, like another form of a hand written letter.

Later on, my mother opened another wardrobe and took out a piece of fabric which had a vintage look. "I hand-wove this a long time ago," she said, "This fabric is even older than you, I have been keeping it for years and years." "I did not know you also wove mother!" I replied. It was a plaid cotton fabric with a bit rough surface. I became very emotional by seeing and touching it. More than 30 years ago, she was sitting in front of a loom somewhere, weaving thread by thread. Now, at that moment, this piece of fabric was in my hands!

My mother explained to me that the looms were commonly seen and used

Figure 2-1. The striped bed sheets made by my cousin.

Figure 2-2. The metallic loom made by the owner of the weaving shop.

Figure 2-3. A weaver in the weaving shop.

by families in her village when she was a little girl. However, they started disappearing later on, together with other hand craft tools and skills. For me, during my childhood, I rarely saw any looms in my surroundings. My mother told me that my cousin wove all the striped bed sheets in one weaving shop nearby. This weaving shop provided the loom and material. People can go there, reserve a loom and weave on their own.

A few days later, I visited the weaving shop. Walking into the shop, I could see many metallic looms (Figure 2-2). Later on, I learned that these metallic looms were made by the owner of the shop. Each loom had a different strip warp. There were several people weaving in the shop that day (Figure 2-3). The owner of the shop told me that most people were weaving the type of bed sheets my cousin had made for my mom and me.

The encounter with the striped hand-woven fabric and the weaving shop stimulated me to start this project and they are very important inspirations for me. It was nice to see that weaving was not forgotten in my hometown and that people are still appreciating the hand weaving process and results.

2.2 High-rise buildings

I moved to Finland from China in 2010. After that, travelling between Helsinki and Xinxiang, my hometown, has become my regular yearly routine. From the year 2010 to 2019, in 9 years, I witnessed many changes in my hometown. One of the significant changes was the rapidly growing high-rise buildings (Figure 2-4). Before I moved to Finland, in my memory, Xinxiang was rather flat with only a few high-rise buildings. Nowadays, because of the newly built high-rise architecture, the landscape has changed a lot.

While passing by those dense high-rise buildings, like walking in a concrete forest, Michael Wolf's work on density buildings appeared in my mind (Figure 2-5). Wolf was a Hong Kong based German artist and photographer. In his series work, "architecture of density", Wolf captured the city's buildings as dramatic geometric abstractions. The same kind of scene can be found in many cities in China.

The striped pattern façade in Wolf's work reminds me of the hand-woven bed sheets mentioned before. They both are vertical stripes. The fabric was woven thread by thread; the building was constructed floor by floor. However, the messages I perceived behind the fabric and the architecture are quite different, or even contrary. Hand weaving requires time and patience. It needs "slow down". On the other hand, the dense high-rise buildings,

Figure 2-4. The high-rise buildings I saw on my way home.

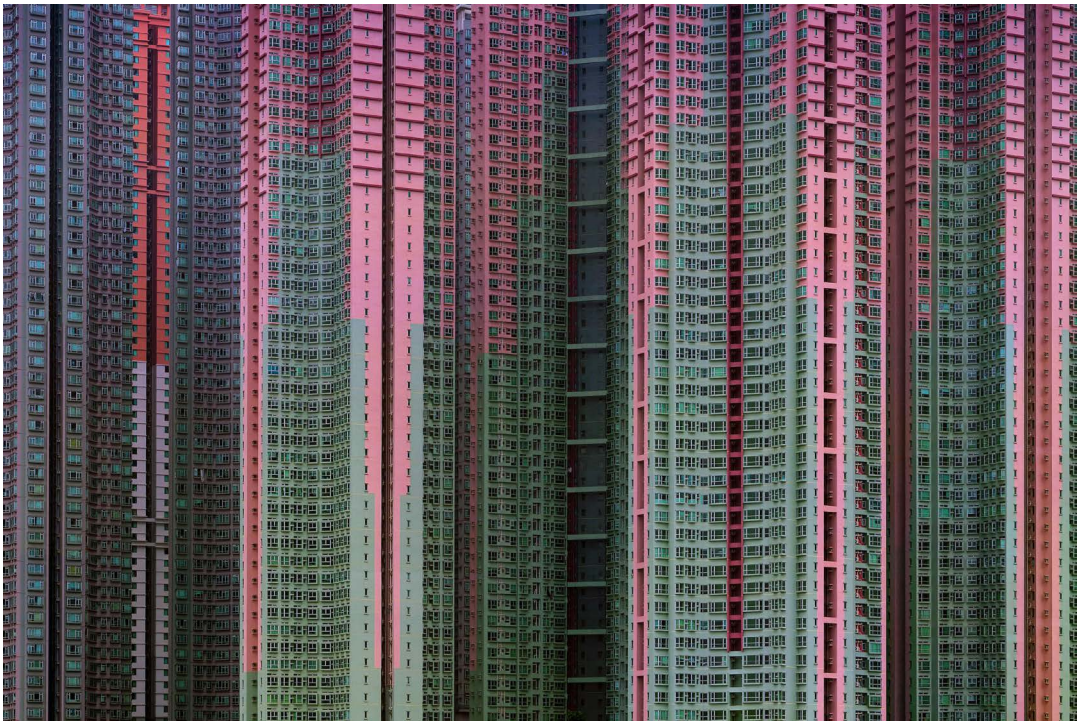

Figure 2-5. Architecture of density. Wolf Michael.

especially the buildings in my hometown, reflect the fast urbanization. They suddenly appeared within the last 10 years, which are the result of “speed up”.

The newly built high-rise architecture in my hometown allows me to see stripes in a bigger scale. In my sketchbook, I placed the image of these buildings next to the hand-woven striped fabric (Figure 2-6). This vision stimulated me to think about the relationship between the fast uralitization, industrialization and craftmanship.

Figure 2-6. The striped fabric woven by my cousin and photograph by Wolf Michael.

2.3 Xiling Art Society

In spring 2019, I travelled to Hangzhou, the capital city of Zhejiang Province in East China, and stayed there for 5 weeks. Hangzhou used to be the capital of Southern Song dynasty (1127-1279). Many well-known painters, calligraphers and poets in history have lived there. Hangzhou has beautiful lake and mountain scenery. The West Lake is one of the most famous attractions in Hangzhou. Throughout Chinese history, the West Lake has influenced the painters and poets for its natural beauty and historic relics. During the trip, I visited different temples and gardens around the West Lake. Among those places, Xiling Seal Art Society impressed me the most.

Xiling Seal Art Society is a Chinese art organization which focusses on the traditional stone seal engraving. I had originally heard about the Xiling Seal Art Society from my father in my childhood. My father is an artist focused on traditional Chinese paintings, calligraphy, and seal. He visited Xinling Seal Art Society many years ago. After hearing about my visit to Hangzhou, my father recommended me to visit Xiling Seal Art Society.

The Art Society was founded in 1904. It is built in a traditional Chinese garden style. The Art Society is located in a small mountain called Gushan near West Lake. Before entering the Society, the surrounding nature had already caught my attention (Figure 2-7). The lake was just in front of the entrance. Along the paths on the way up to the hill, there were serval houses built in traditional style. The color and material of the Art Society aroused my interests. The rooftop, the rock, the wood pillars! After climbing for a few minutes, a small pond and garden appeared (Figure 2-8). The whole trip was like walking through a Chinese painting. Since it is a Seal Art Society, there were many old stone engraved artworks and some traditional Chinese paintings displayed on the wall in the open gallery (Figure 2-9). The art work. The Mountain. The water. The plants. The nature. Standing in the middle of the garden, seeing lakes in front of me, hearing birds singing; it was a very unique moment for me (Figure 2-10). After the trip, I developed so much passion to discover more about other Chinese gardens. I joked with friends that, “After 30 years, I finally opened my eyes and fell in love with the traditional Chinese culture.”

During the visit, lots of stripe elements appeared before me, the pillars, the bamboo, the tiles on the roof top. Those striped elements reminded me of the striped fabric mentioned previously. Likewise, I could not stop thinking about the high-rise buildings. They are reflecting two very different ways of living. The Xiling Art Society depicts a beautiful scenario wherein human beings cohabitate with nature. It is slow, peaceful, and mindful. The high-rise buildings are quite on the opposing side of this notion.

Figure 2-7.
The entrance to the Art Society.

Figure 2-8.
Pond in the middle of the Art Society.

Figure 2-9.
The stone engraved artworks on the wall.

Figure 2-10.
The view to the West Lake from the Art Society.

After the visit to the Xiling Art Society, the idea of combining the beautiful garden scene with the striped woven fabric started to generate and grow. Like the gift, the striped bed fabric I received from my cousin, I hope I can bring the beautiful scenes from the Chinese garden as a message to other people.

2.4 A bag

During the trip, in a local shop in my hometown, I found this colorful striped travel bag (Figure 2-11). The shop sold lots of different cloths, bags, and other goods for everyday life. Most of the products were poorly made with a cheap retail price. This bag caught my attention immediately while I entered the shop. This type of bag is a typical travel bag widely used by migrant workers who travel from the countryside to the cities in many places in China. It had the simplest shape and structure, due to the needs of low cost and mass-production. Walking around in the shop, I saw many other fast produced bags.

Standing in the middle of the shop, I could imagine the fast working scene in the factory where those bags were produced. Similar to the high-rise building scene mentioned before, they represent the “speed up”. On the contrary, the Chinese garden and handwoven fabric mentioned before represent “slow down”. I witnessed the contrast between “speed up” and “slow down” constantly during my trip. This became the inspiration and motivation of the project.

Figure 2-11.
A bag from local shop in Xinxiang.

Chapter 3.

Loom, plain weave and stripes in textiles

My encounter with weaving happened in the year of 2014. I participated in one basic weaving course from the university. Recollecting that time, I think my motivation was the loom. Every time I passed by the weaving studio, I was very amazed by the mechanism of the wooden shaft loom. The weaving course was a fantastic experience. After so many years, I am still in love with the basic shaft loom and the basic plain weave structure. In this chapter, the loom history and plain weave structure will be researched and described.

Furthermore, the striped fabric is the most commonly seen hand-woven fabric from different parts of the world in different cultures. In the latter part of this chapter, I will take you on a trip through striped textile history, studying some of them, discovering different stories behind each striped fabric as the inspiration of the design practice.

3.1 loom

> *"The yarn running lengthways of the cloth is the warp; that running crossways and carried by the shuttle is the filling or weft. The order in which the warp and filling interlace each other is the weave." (Oelsner, 1915:14)*

The weaving of textiles on looms, which is commonly agreed, began during the Neolithic Age. The earliest looms were probably much like the Ojibway bag loom (Figure 3-1) in construction (Broudy, 1993:14). The warp threads were hung on a cord between two sticks or from a tree, and they were freely suspended. The fibres used for Ojibway loom were often the stiff fibres that hang relatively parallel by themselves (ibid.). For example, the Indian hemp, the shredded bark of mulberry and cedar trees were commonly used (ibid.). Another one of the earliest representations of loom is the horizontal ground loom from Badari, which can be dated back to c. 5000 B.C. (ibid.). The illustration (Figure 3-2) on the pottery bowl demonstrated the structure. The warp was stretched horizontally between two beams above the ground. The lines in the middle could be the symbol of sword beater, heddle rod and shed rod. If the weavers have to move in the middle of the weaving process, they could simply pack the loom by pulling up the pegs and rolling up the warp (ibid.).

The warp-weighted loom appeared due to the needs of holding the finer warp threads parallel, which otherwise could not hang parallel by themselves. The warp threads were tied in small bunches to stone, pottery, or metal (Broudy, 1993:23). Figure 3-3 shows the illustration of Circe's loom on

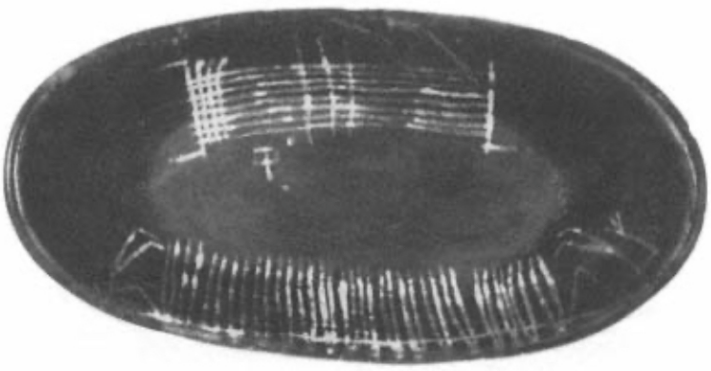

Figure 3-2.
Horizontal ground loom on Badarian pottery bowl.
Courtesy of Petrie Museum, University College, London.

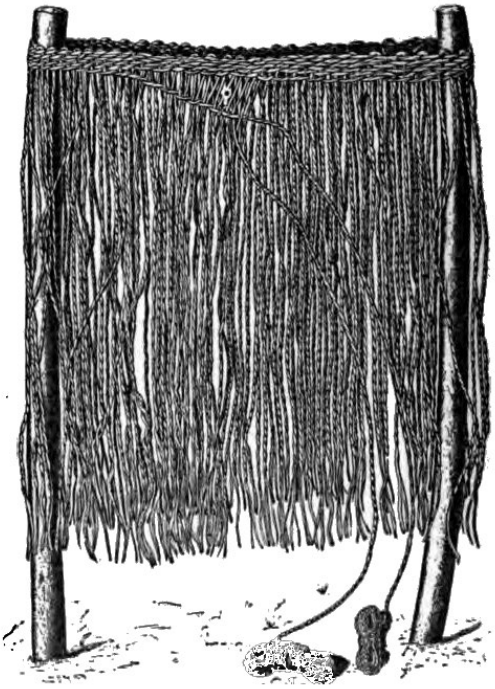

Figure 3-1.
Ojibway weaving frame.
From Clark Wissler.

Figure 3-3.
Circe's loom.
Courtesy of the Ashmolean Museum, Oxford.

a pottery from the ancient Greek. Figure 3-4 shows the loom weights found at Olynthus. Fugure 3-5 illustrates the structure of the warp-weighted loom:

> *"The warp is divided by taking alternate threads into the front(H) and back(I) warps, which are kept apart by a shed rod (D). Leaning the loom against a wall or rafter forms one of the two sheds needed for weaving. The second shed if formed by knitting heddles to the back warp and around a heddle rod (C), which can then be pulled forward and rested in supports (E) to open then shed. The front warp thus remains stationary, while the back warp is shifted back and forth to change sheds. Using a sword beater, the weaver beats the weft upwards against the fell of the cloth." (Broudy, 1993:25)*

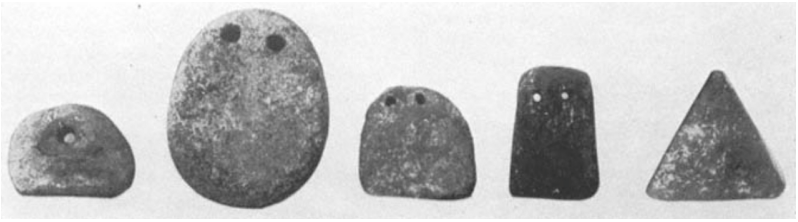

Figure 3-4.
Loom weights found at Olynthus.
Courtesy of The Johns Hopkins University Press.

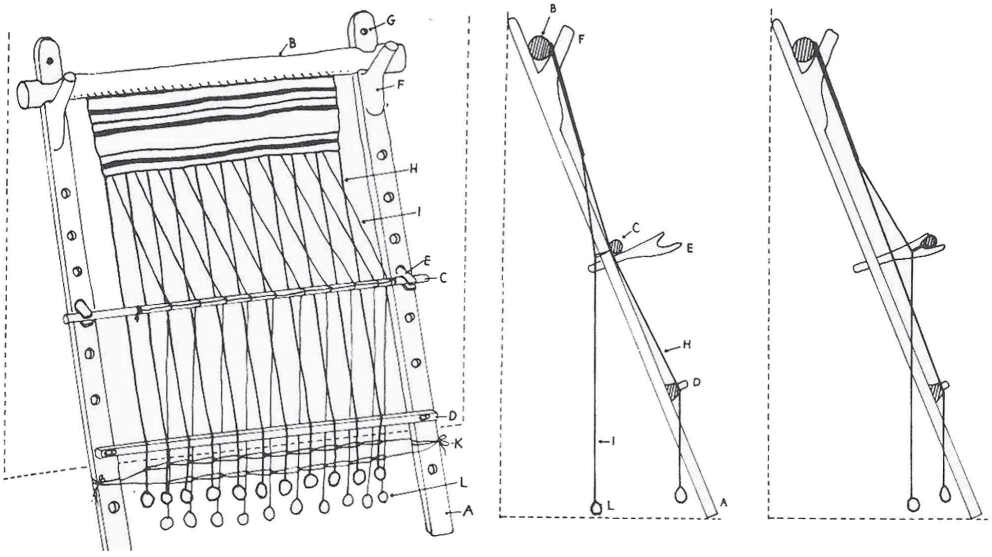

Figure 3-5.
The warp-weighted loom.
Norsk Folkemuseum, Bygdfy-Oslo.

The two-bar loom, stretching the warp between two bars, is another fundamental loom that can be found in different variations in all cultures that weave cloth. The early two-bar loom can be dated back to the ancient Egyptian Loom. As shown in figure 3-6, which is a tempera copy of a wall painting from the Tomb of Chnem-hotep, several women were weaving with the two-bar loom. The warp is stretched horizontally between two beams held in place by pegs pounded into the ground (Broudy, 1993:38). The two women on the left and the right side of the loom are the weavers and the women standing behind them is generally considered to be the taskmistress (Broudy, 1993:39). Figure 3-7 shows the structure of the Egyptian horizontal loom. The heddle jack here is used to change the shed.

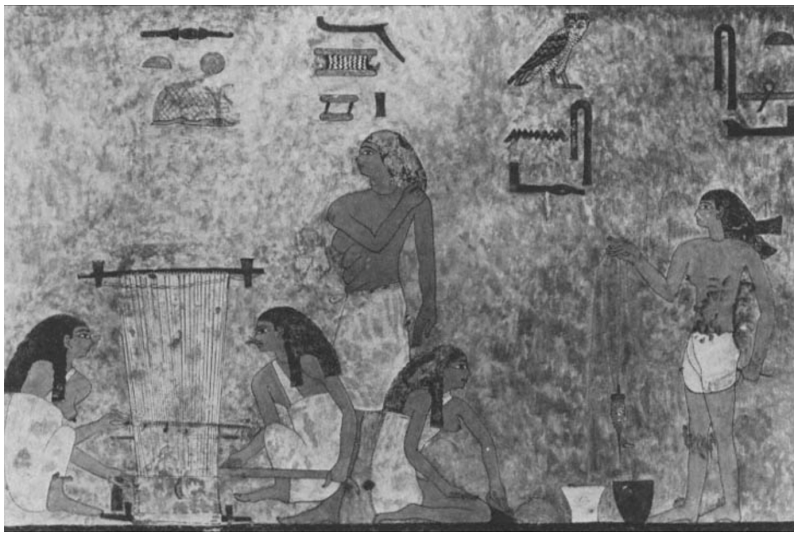

Figure 3-6.
Tempera copy of a wall painting of women weaving and spinning from the Tomb of Chnem-hotep.
The Metropolitan Museum of Art.

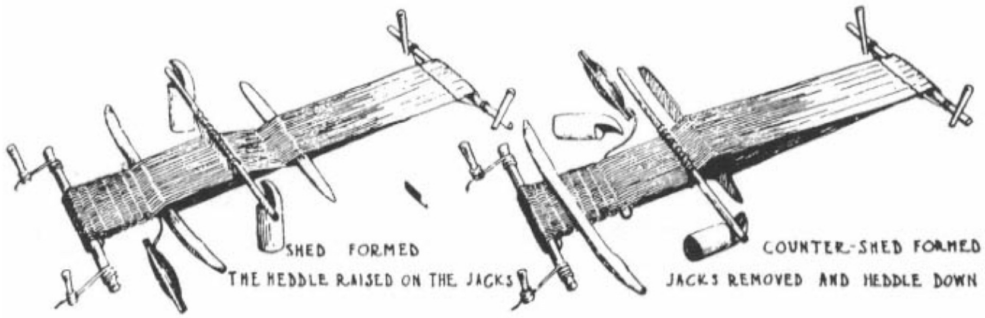

Figure 3-7.
Working model of Egyptian horizontal loom showing use of heddle jacks.
Petrie Museum, University College, London.

Another type of loom, the backstrap loom, was also commonly used in different parts of the world throughout history (Figure 3-8). Instead of holding and stretching the warp by two objects as in the Egyptian loom, in the backstrap loom, the warp is stretched between some stationary object and the body of the weaver (Broudy, 1993:76). The warp tension is controlled by the weaver and the weaver becomes part of the loom, as Mr Broudy explained how the basic Peruvian backstrap loom works (Figure 3-9):

> *"The heddle bar (c) has been raised to open the shed, and the weft, wound on the bobbin (e), has been partially inserted. After beating down this shot of weft, the batten (d) would be removed, the heddle bar lowered, and the opposite shed opened by the shed rod (b). The weaver would insert the batten into this narrow opening and, turning the batten on edge, widen it enough for the passage of the weft." (Broudy, 1993:80)*

The backstrap loom could be found in Peru, Mexico, Japan, Malaysia, Indonesia, Philippines, China, Korea, Tibet, Burma, and India (Broudy, 1993:76). Nowadays, it is still commonly used in southern Mexico (ibid.). In addition to one-person backstrap loom, figure 3-10 shows the three-person backstrap loom in Peru (Broudy, 1993:80). In this way, wider fabric can be produced from the backstrap loom. The backstrap loom is poetic in the way that the human body becomes part of the loom. The results, the final fabric, become the documentation of the movement of the body.

Figure 3-8.
Basic backstrap loom, Mexico.
Photograph by Donald Cordry.

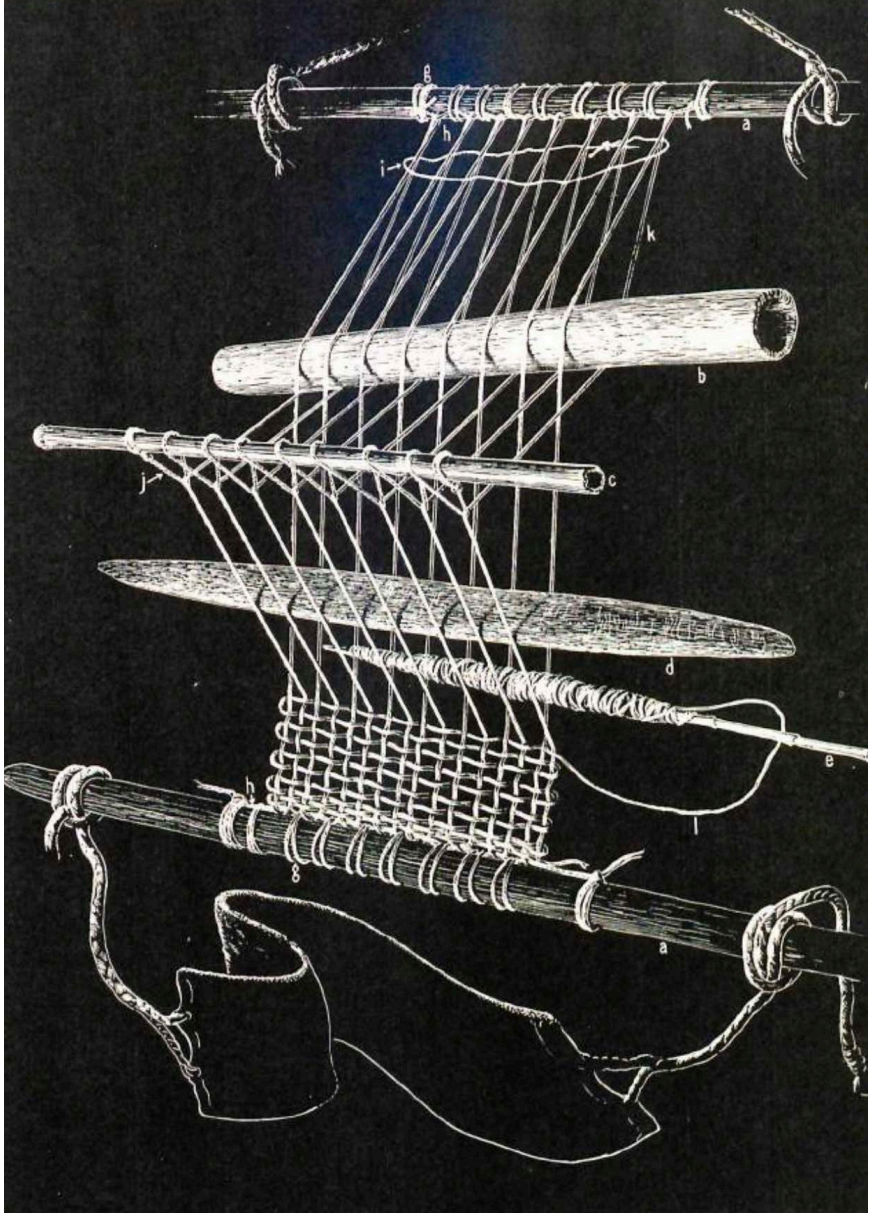

Figure 3-9.
Backstrap loom structure.
Courtesy of the American Museum od National History.

Figure 3-10.
Three-person backstrap loom, Peru.
Courtesy of Truman Bailey and the American Museum of Natural History.

The rigid heddle structure was developed to combine the shed rod and heddle rod as one (Broudy, 1993:90). As shown is figure 3-11, a series of short reeds or sticks, was placed parallel by top and bottom cross bars. Each reed has a small hole in the centre. The warp yarns go through these holes and the slots between each reed alternately. By pushing down the heddle, one shed was formed (ibid.). Figure 3-12 shows the Finnish rigid-heddle loom. The heddle is carved from a single piece of wood.

In another type of loom, the treadle loom, the feet were involved in changing sheds, giving more freedom to hands for inserting the weft and beating in. The narrow-band treadle loom from West Africa is used for weaving stripes of cotton between five to fifteen centimetres wide (Broudy, 1993:119). Figure 3-13 shows one type of narrow-band treadle loom used in Sirra Leone, West Africa. The heddle harnesses and treadles were hung from a tripod. The tripod could be moved along the warp during the weaving process (Broudy, 1993:120). Behind the weaver, the cloth beam is pounded into the ground. The finished cloth on the cloth beam can be rolled up (ibid.).

Since my thesis focusses on the basic plain weave and shaft loom, the modern development of the computer aided shaft loom and the Jacquard loom will not be discussed here. In the next section, the plain weave structure is researched and discussed.

Figure 3-11.
Rigid-heddle frame.

Figure 3-12.
Finnish rigid-heddle loom.
Photograph by Istvan Racz.

Figure 3-13.
Mende tripod loom, Sierra Leone.
Courtesy of Calderdale Museums Service.

3.2 Plain weave and stripes

The first woven structure I practiced on a loom was plain weave, which probably is the same for most weavers. As G. H. Oelsner described: "weaves are divided into three primary classes: the plain weave, the twill weave and the satin weave" (Oelsner, 1915:14), and the plain weave is the "very beginning" of weave structures (Alderman, 2004:3). Figure 3-14 shows the basic structure of plain weave. The structure is so basic, so simple but so fascinating. The fabric woven with plain weave structure has a finer look and harder feel, and less elasticity than fabrics wove with other weaves (Oelsner,1915:15).

> *"Each time the warp (or weft) goes from the face (the side facing you) to the back (the other side) it is said to intersect the plane of the cloth. As it travels to or from the back of the cloth, it forms another point of friction, which helps to make the cloth stable and strong." (Alderman, 2004:3)*

There could be different ratios of ends to picks in plain weave. In balanced plain weave, the ratio of ends to picks is 1:1; in unbalanced plain weave either warp covers the weft (warp faced plain weave) or vice versa (weft faced plain weave), which is also called rib weave structure (Figure 3-15 & Figure 3-16).

The most often seen plain weave fabric around us in everyday life is the weave that uses the same warp and weft, exact same fiber, yarn style, and color. Instead of using the same weft and warp yarn, different color yarns could be used for warp and weft. If the chosen yarn is medium to heavy, the two colors of the warp and weft will not blend together visually unless people view it from a distance (Alderman, 2004:4-5). On the other hand, if the yarns are finer, the color of the weft and wrap will blend very well even if viewing it very closely (ibid.). By using very contrasting thick yarns for weft and warp in terms of lightness and darkness, the salt-and-pepper or tweedy effect would appear (Alderman, 2004:5). Of course, more colored yarns could be applied to plain weave. A stripe fabric is produced by using more than one color in warp or weft, and the yarns of each color are grouped together. If both warp and weft yarns have more than one color, then the plaid fabric is produced.

Stripe is the most basic and the very beginning of all the patterns which could be woven on the loom. The stripe fabric from my cousin, which was mentioned in chapter 2, was woven in a warp-faced plain weave structure with warp stripe. This required a new warp to be made for each different stripe design. The colored warp yarns were selected by the weaver by his or her preference, and all the weft yarns used were matching white yarns. Keeping the weft yarn the same allowed the weaving without the interrup-

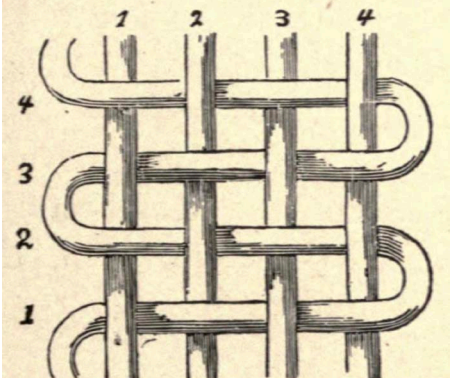

Figure 3-14.
Plain weave structure.
G. H. Oelsner.

Figure 3-15.
Weft-faced plain weave.
Centinela chimayo weavers.

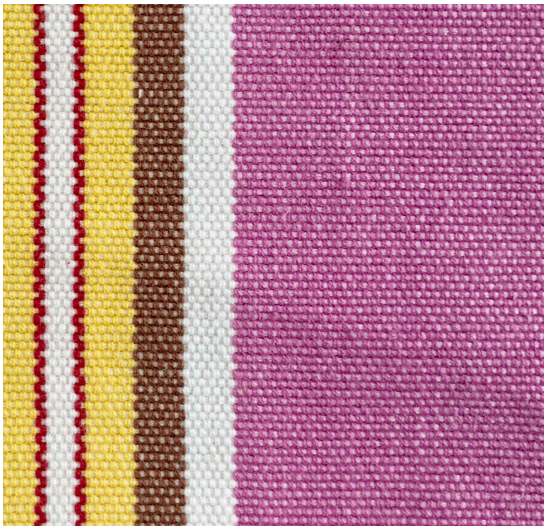

Figure 3-16.
Warp-faced plain weave.

Figure 3-17.
Warp strips (from the local weaving shop in Xinxiang) and weft stripes.

tion of switching to different colored yarns. The weavers could repeat the same movement for hands. For feet, since only two peddles were needed for plain weave, the movement was as simple as stepping. On the other hand, the stripes could also come from the weft direction. In this way, it gives the weaves more possibilities to weave different stripe designs using the same warp (Figure 3-17).

3.3 Striped textile stories – a trip through the striped textile history

This section studies different stories behind the striped textiles from different cultures around the world. All these stories become the inspiration for the design process. We will start this trip from the negative stripe between 13th – 16th centuries in Europe, and then move to the traditional stripe from the Basque country and the Kente cloth from Ghana. In the end of this section, the last stop of this trip is the striped textiles I encountered in the local weaving shop.

3.3.1 The negative stripe between 13th – 16th centuries in Europe

> *"In the medieval Western world, there are a great number of individuals – real or imaginary – whom society, literature, and iconography endow with striped clothing. In one way or another, they are all outcasts or reprobates……They all disturb or pervert the established order; they all have more or less to do with the devil." (Pastoureau, 1991/2001:2)*

The striped cloth and clothing can be seen almost everywhere nowadays: striped socks, pants and so on. However, dating back to 1000 years ago in the western world, people would not see it as popular as today. On the contrary, Medieval people consider the striped cloth as negative symbolism. As Mr. Pastoureau wrote in the book "The devil's cloth", one possible origin behind the "negative" stripe could be traced back to the proclamation in the nineteenth chapter of Leviticus, as the medieval exegetes and prelates interpreted, "You will not wear upon yourself a garment made of two colors". The medieval Christians could have followed the proclamation and considered the striped cloth as outrageous (Pastoureau, 1991/2001:3).

Between thirteenth and sixteenth centuries, there were decrees forbidding clerics to wear two-colored cloths, targeting bicolor, striped, and checked cloths (Pastoureau, 1991/2001:13). For example, in 1310, in the French town of Rouen, a cobbler and, according to the local archives, "said to be a cleric," was condemned to death because he was married and "had been caught in striped clothes" (ibid.).

Furthermore, there were also customs, laws, and regulations that required certain people to wear two-colored or striped, targeting the prostitutes, the jugglers and clowns, the hangman, and so on (Pastoureau, 1991/2001:13). For example, in Germanic law, in the early Middle Age and between 1220 and 1235, the striped cloth was imposed on or reserved for serfs, bastards, and the condemned (ibid.). In the northern Italy, as seen in figure 3-18, three young women condemned to prostitution were dressed in striped cloths in the painted mural (Pastoureau, 1991/2001:15).

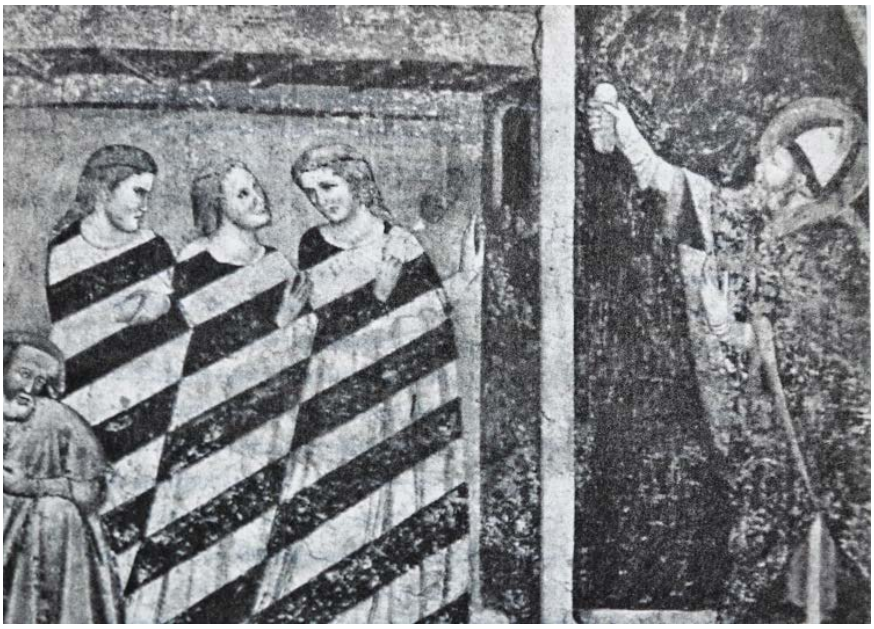

Figure 3-18.
Three young women condemned to prostitution, saved by Saint Nicholas.
Painted mural, northern Italy.

In the Medieval western world, with a discriminatory system, each person was required to wear the cloth that marked his or her gender, state, or rank (Pastoureau, 1991/2001:14). Why was stripe cloth delegated to the outcasts? Mr. Pastoureau (1991/2001) offered a theory on the association between the stripe cloth and the transgression. Based on his theory, the Medieval eyes were trained to read images by separating them into layers of background and foreground. The distinction between figure and ground was very important. However, the stripes are a single surface of alternating colors, which is impossible for the Medieval eyes to read. Perhaps this was what disturbed their sensibilities.

Later on, during the French revolution, the stripe had finally come out of the "bad" zone and became a radical symbol (Pastoureau, 1991/2001:48). It started appearing everywhere from clothing of all sorts to fabric and objects in France during the French Revolution period (ibid.).

> "*For two centuries, in paintings, engravings, picture books, theatre, and later in film, television, comic stripes, all revolutionary décor is striped décor, and any patriot or sans-culotte is a figure wearing striped pants or vest ."*
> *(Pastoureau, 1991/2001:49)*

Stepping into the modern era in Europe, stripes have a wide diversification in both physical appearances and symbolic meanings (Pastoureau, 1991/2001:4). It appears on children's cloth and things to bring playfulness. It is also used for leisure and sports clothes, for instance the famous Adidas

stripes. People can see traffic signs in stripes, as a meaning of caution. Also, stripes have become hygienic, appearing on sheets and underwear. With the wide diversification of stripes, it truly becomes a universal pattern to fulfill people's everyday life.

3.3.2 Basque country linen

Centuries ago in the Basque country, people used large striped rectangular linen blankets (Figure 3-19) to protect the oxen from the sun and insects (de Luz, n.d.). These blankets were woven out of the flax grown in the fields. The cattleman put the blanket on the oxen after the morning climb up the Pyrenees to the fields. As the oxen got hot climbing up the mountain, the blanket would absorb the sweat and slow the cooling process (ibid.). At the same time, the blanket also protected the oxen from the pestering flies, allowing the oxen to rest more favorably (ibid.). Moreover, in order to identify the ownership of the oxen to a particular farm, the owners wove the linens with their specific striped pattern (ibid.). These stripes functioned as the signature or logo of a farm.

Due to the suitable humid climate of the Pyrenees, flax was widely cultivated in most Basque farms in ancestral times, alongside the farm animals, an orchard, and a vegetable garden (de Luz, n.d.). The flax farm provided sufficient materials to weave the linen blankets.

Later on, these striped linens (Figure 3-20) started appearing inside the farmhouses to be used as fine table and kitchen linen with a classical seven-striped design (de Luz, n.d.). The seven stripes indicated the seven provinces in the Basque country. The width of the stripes indicated the wealth of the landowner.

More stories about the traditional Basque country linen and the Basque country culture was revealed by my friend who is from the Pays Basque. She mentioned that there was a certain story behind a certain traditional Basque country color: deep blood red represented the people who worked with the oxen; green indicated the people who worked in the fields, and blue represented the people who worked at sea. These colors were not only woven into the fabric, but also painted on the houses. The color on the houses indicated whether the family made its living by working with animals, in the fields or by the sea.

The traditional Basque country striped fabric has passed its thread from generation to generation. Nowadays, there are still many weaving mills in Basque country producing the striped fabric. Tissage de Luz (n.d.) is a family-owned brand and weaving mill, and figure 3-21 shows one collection from

Figure 3-19.
Large striped rectangular linen blankets for protecting the oxen.
Maison-Basque.

Figure 3-20.
Napkin with seven stripes.
Lartigue 1910.

Figure 3-21.
Products from Tissage de Luz.
Tissage de Luz.

its web shop. This family business can be traced back to over 100 years ago in 1908. It was founded by Jean-Baptiste Gouze, son of a hand weaver. Mr. Gouze established his reputation by the originality and exceptional quality of his fabric in that time (ibid.). 100 years later, the brand still keeps the Basque spirit as its inspiration:

> *"While pursuing new directions, Tissage de Luz remains solidly anchored in the Basque identity. Green pastures and mountains, stone works, sunsets by the sea… so many poetic and natural worlds in subtle colors which serve as sources of inspiration to us." (Tissage de Luz, n.d.)*

3.3.3 Kente cloth from Ghana

Kente cloth is made of thin stripes generally between seven to twelve centimeters wide (LaGamma and Giuntini, 2008:36). These stripes are woven on a horizontal treadle loom with two double-heddles, typically by men (Figure 3-22). When the woven stripes are made, they will be cut and sewn together selvage to selvage for forming a complete Kente cloth (ibid.). The piece is usually worn wrapped around the shoulders and waist like a toga, and it requires twenty-four stripes to make the Asante man's Kente cloth (ibid.). The Kente cloth is Ghana's national cloth and is worn for special occasions in both Ewe and Asante societies. For example, people from the Ewe communities of southwestern Ghana and western Togo wear the Kente cloth for festivals, religious celebrations and important transition events in an individual's life (ibid.).

Kente cloth has a long history. Historically, it can be traced back to the traditions of ancient west African kingdoms (Touring Ghana, n.d.). Some historians think that "Kente is a development of various weaving traditions that existed around 17th century" (ibid.). Moreover, there is a legend history about Kente cloth's origin. In the legend, Ota Karaban and his friend, Kwaku learned weaving by observing a spider weaving its web (ibid.). After the weaving lesson from the spider, the idea of Kente fabric was born for the men, and people started adopting the fabric for all kinds of special occasions (ibid.). In this legend, it happened in the town Bonwire, which is still an important town for the Kente cloth production in Ghana (ibid.).

The color symbolism affects the aesthetic beauty of a Kente cloth, and it is chosen by the weaver based on his tradition or a matter of preference. For the color symbolism, "blue means love; green means growth and energy; yellow or gold means wealth and royalty; red means violence and anger; white means goodness or victory; grey means shame and black means death or old age" (Body-Evans, 2018).

Figure 3-22.
Horizontal treadle loom with two double-heddles.
Touring Ghana.

Figure 3-23.
Kente cloth made from cotton and silk.
British Museum.

Figure 3-23 shows a Kente cloth from Ghana which is exhibited in the British Museum, London. This piece was collected in West Africa between 1880 and 1900. It is made from cotton and silk, with 188cm width (warp) and 279cm height (weft). It consists of twenty-four stripes, each about 8-centimeter-wide, woven with cotton and silk yarn. The stripes are woven from 7 looms with different warp arrangement. As LaGamma and Giuntini (2008) described this piece:

> *"The resulting vertical stripes present rhythms of repetition that are not immediately discernible. To further vary the pattern, the colorfully striped asymmetrical stripes are set in opposite directions, so they mirror each other. The long, slightly warp-face stripes are broken by horizontal weft-face designs, some of which are inlaid with more intricate supplementary-weft pattern." (LaGamma and Giuntini, 2008:36)*

3.3.4
The striped bed sheets from the local weaving shop in my hometown

The local weaving shop is located in one small village near my hometown Xinxiang. My cousin lives near the weaving shop, and she went there quite often to weave. I did not know about this place until I got the handwoven sheets from her, as mentioned in the chapter 2. My cousin informed me that only in recent years this type of weaving shop began to appear. There are also other similar weaving shops in other places near her village.

Most of the weavers in this shop are people who live nearby in the village. They go to weave during their spare time. Because many of the people who live in the village are farmers, unlike typical office workers, they can easily find a suitable time to weave.

In this weaving shop, the weaver can either use the ready-made stripe warp or order their own warp. The owner also had the facilities to make the warp in another place nearby. As mentioned in the chapter 3.2, the striped fabrics woven in this shop were all from the warp direction. In total, there were five looms in this shop, and each of them had different warp stripes. Figure 3-24 shows several fabrics woven from these looms by my cousin. The woven structure used in this shop was plain weave only. By using just one weft material and only two peddles, which could not be simpler, the weaving process proceeded quite quickly and easily. Also, the width of the warps was all about 70cm, which was easy to weave. During the visit, I could see the weavers chatting and weaving at the same time in the shop. Since most weavers in the shop were weaving bedlinen, they needed to weave few meters. Afterward, the woven fabric needed to be cut and sewn together from selvedge to selvedge to form a bedlinen.

Figure 3-24.
Three striped fabrics woven by my cousin.

The colors of the stripes in the weaving shop were stunning. As shown in the fabrics woven by my cousin, the different colors and rhythm were so attractive. One of the weavers in the shop told me that the color choice was totally based on her personal preference. My cousin told me that most of the colors she chose were also based on her personal preference. Sometimes she limits the amount of the colors to ten for its symbolism. Ten is a symbol of perfection in many places in China.

Figure 3-25.
The metallic loom in the weaving shop.

Chapter 4

Chinese gardens

In the first part, the history of the Chinese garden will be researched and studied. Further, I visited 2 traditional Chinese gardens in Suzhou, China during October 2019. The field trips are documented. In the end, the elements of the Chinese gardens are researched and analyzed.

4.1 Chinese garden history

> *"The Chinese character for garden 園 (the original complex form for "garden" pronounced as yuan), reflects this garden ideographically. The four outside lines signify the earthen walls surrounding the property. The 土 at the top, or "northern edges," of the character signify the earthen walls surrounding the property. The small square in the center 口, indicates a pond (or empty space) fronted by trees, stones, and hills, which are represented by 个."*
> *(Hu, 1991:8)*

The origin of the Chinese garden can be traced back to a few thousand years ago: recreational areas and natural gardens were built with hills, streams, springs, plants, and animals (Chen, 2018:37). Later on, during the Qin and the Han dynasties, the gardens had been shifted into places for enjoyment, exclusively for emperors (ibid.). For example, the Palace Qin was constructed by the emperor Ying Zheng of the Qin dynasty, covering an area of 150 kilometers (ibid.). As time has passed, the Chinese garden has very board meanings nowadays. It could mean a residential garden with pools and hills, a temple garden, or the palace garden of the imperial family (Hu, 1991: 8). They all share a common scenery with hills and ponds, a harmony between natural charm and man-made architecture (ibid.). In this thesis project, the Chinese gardens I visited and researched were residential private gardens.

The development of the private residential gardens can be traced back to the Han dynasty (Chen, 2018:38). During the Han dynasty, gardens filled with ranges of rockeries had already appeared. Towers and pavilions were built in the gardens around the rocks. The gardens imitated the sceneries of nature. After the Han dynasty, during the Wei, the Jin, and the Six dynasty, wars happened constantly in China, and society was undergoing a dramatic change. These led some scholar-officials, who were politicians and government officials, to quit politics and worship of Buddha for self-cultivation (Chen, 2018:39). They left the government and started to build their residence gardens to pursue their ideal. Among these scholar-officials, many of them were famous painters, calligraphers, and poets. Lots of poetry about nature and paintings on mountains and rivers were composed after they started their life in their new residence. Figure 4-1 shows the scene of composing poems together among several scholars (Hu, 1991:8). From

Jiangsu and Zhejiang region, the southern region of China, came a significant portion of scholar-officials. They purchased land and built residences in this area. Among those residential gardens, quite a few survived till present day, becoming the symbol of the Chinese garden. Most of them are found in Suzhou and its surrounding areas. The gardens I visited are located in Suzhou.

Figure 4-1.
A painting by Wen Zhengming from Ming Dynasty.

4.2 Field trip

4.2.1 Cang Lang Ting

The first garden I visited for the field trip is Cang Lang Ting. It is located in the Southern part of Suzhou, and it is definitely one of my favorite gardens from the trip. The name of the garden, Cang Lang, can be translated as Surging Waves. Ting means Pavilion. Cang Lang Ting is one of the earliest gardens in Suzhou city. It covers an area of roughly 10000 square meters. It used to be a residential garden.

Before entering Cang Lang Pavilion, I was instantly attracted by the surrounding stream (Figure 4-2). It was October, and I just missed the water lily and water lotus blossom. However, there were still lots of leaves floating on the stream. Water lily and water lotus are commonly cultivated plants in Chinese gardens. The floating leaves of water lotus reminded me of my father's paintings. My father is a traditional Chinese water and ink painter, and one of his painting themes is lotus flower (Figure 4-3). My father told me that lotus flower was favored by lots of traditional Chinese painters, because the flower rises from the mud and blooms in exquisite beauty. It symbolizes the purity of the heart and mind.

Entering the Cang Lang Pavilion, I was presented with the rockery in front (Figure 4-4). Cang Lang Pavilion is centered by ranges of the rockery. Some kids were playing hide and see in the rockery. I turned left and started walking along the long open gallery.

Figure 4-2.
The surrounding stream.

Figure 4-3.
My father's painting.

Figure 4-4.
The rockery.

Figure 4-5.
The long gallery.

Figure 4-6.
The grey tiles.

The long gallery was built along the stream, and it turned at every few meters (Figure 4-5). I followed the gallery, and it guided me somewhere hidden behind the rocks. The gallery was constructed by many wooden pillars. The wooden pillars were painted in a dark red-brown color. Over time, the paint had worn which resulted in peeling, thus revealing the original color and texture of the wood. The window on the wall of the long gallery was quite special. Different windows had different shapes. The ground was tiled with grey bricks arranged in a chevron structure (Figure 4-6).

After a walk through the gallery, it led me to one of my favorite spots in the garden (Figure 4-7). I sat there for quite a long time. The stream was just in front of me with the gallery on the side. Between the gallery and the stream, laid the beautiful rocks. The gallery turned and disappeared at the end. The trees and plants swayed slowly with the breeze.

I continued walking along the gallery. After a while, through the windows in the gallery, some golden bamboos appeared (Figure 4-8). It was my first time seeing growing bamboo in gold color. The color and the texture of this bamboo were so special. I stood there staring at the bamboos for a while. Besides bamboos, lots of other plants were grown in the garden (Figure 4-9).

During my visit, an exhibition about boat orchids was on display. Boat orchids were presented in different rooms (Figure 4-10). These rooms in the garden were the places where guests were received originally. The orchid flower is often seen in traditional Chinese paintings. My father also painted boat orchids flower. He told me that traditional Chinese painters loved painting the orchid due to its character. The flower grew in the hidden peaceful places in the mountains and it had a very delicate smell and shape. The fragrance of the orchids would fill the room without anyone remarking it, yet when it disappeared each person present would feel its loss (Keswick, 1986:176). All these qualities endeared them to scholars. The appreciation of the orchids was a moral and aesthetic experience (Keswick, 1986:177).

Before entering another part of the garden, Yuemen came before me (Figure 4-11). Yuemen, which can be translated as moon gate, is a typical element in Chinese gardens. Yuemen had a grey frame without a door, revealing the scene on the other side. This method of “frame scenery” was commonly used in the Chinese garden design. The circle in Chinese culture is a symbol of heaven and perfection. Lots of other things were designed in circle shapes in the garden, for instance the windows and the table. Also, because of the curved bottom of the circle in the moon gate, people had to walk straight through the center. For the same reason, each visitor went through the gate to the other side individually.

Figure 4-7.
My favorite spot in Cang Lang Ting.

Figure 4-8.
The golden bamboos.

Figure 4-9.
Plants in the garden.

Figure 4-10.
The boat orchid.

Figure 4-11.
Yuemen.

Figure 4-12.
Ting.

The figure 4-12 shows one small Ting in the garden. Ting, which means pavilion, is the simple resting points where a scenic view can be enjoyed (Rinaldi, 2011:97). There was a poem written on the left and right pillar of the pavilion. The poem described how the poet admired and loved bamboo. Bamboo is also favored by my father. He told me that bamboo represented the character of moral integrity, modesty, and loyalty.

During my visit in Cang Lang Pavilion, there were only a few visitors, so I was able to enjoy the garden peacefully. There were so many spots in the garden for sitting, resting, and slowing down. The visit was around 2 hours, but I felt I was in the garden for a much longer time.

4.2.2 Yi Pu

After visiting the Cang Lang Pavilion, I continued my field trip to the next garden Yi Pu in the same city Suzhou. Yi Pu was built during the middle years of the Ming Dynasty (1368-1644), and the original layout has remained the same.

The entrance to the Yi Pu garden was a long corridor between the white walls (Figure 4-13). The white had a beautiful rain wash texture. I could see different shapes of windows on the white wall. Passing by the long entrance, the pond appeared in front of me.

The pond (Figure 4-14) was located in the center of the garden in a nearly square shape. The pond was surrounded by several rooms, a man-made hill made of rockeries and a pavilion (Figure 4-15). This type of pavilion next to the water is called Xie in Chinese. Xie is the place for people to rest and enjoy the water scenery. Sitting in the pavilion, I could feel the spaciousness without any crowd despite the small size of the garden. I think the water here functioned as a mirror and “enlarged” the space. The zig-zag bridge was placed above the pond, allowing people to walk and enjoy the view above the water. Zig-zag bridge is often seen in traditional gardens. It extended the walking path and slowed down the steps.

Figure 4-13.
The entrance to Yi Pu.

Figure 4-14.
The pond.

Figure 4-15.
The pavilion.

Figure 4-16.
Xiang Yue Lang.

On the west side of the pond the Xiang Yue Lang was located (Figure 4-16). Xiang means enjoy, yue means moon and lang means gallery. Bamboo was planted behind the window in front of another wall. With the poem written on the left and right, it formed a beautiful artwork.

Before coming to Yipu, I watched a documentary about this garden. From this documentary, I learned that the famous Chinese writer Wen Zhenheng and his family used to live in Yipu. Wen Zhengheng is the author of the famous book Zhang Wu Zhi. The name of the book can be translated as Treatise on Superfluous Things. This book was finished by the year 1621. It is about garden architecture and interior. The book is divided by the following 12 chapters: House and Dwelling; Flowers and Trees; Water and Stones, Fowl and Fish; Books and Paintings; Chairs and Beds, Utensils; Cloths and accessories; Boat and carriage; Arrangement; Vegetable and Fruits; Incense and Tea (Wikipedia contributors, 2020). The book provides advice and suggestions about these elements. At the same time, it also demonstrated the slow life style in the garden. It is touching to see how people paid attention to everyday life commodities around them and enjoyed the simple things they had. Figure 4-17 shows the placement of furniture in one room in Yi Pu.

After the field trip, the elements in the gardens are analyzed and researched in the following part.

Figure 4-17.
The placement of furniture in one room in Yi Pu.

4.3 Elements in Chinese gardens

4.3.1 Water and rocks

“Shangshui”, which means Mountain and water, is the Chinese word for landscape. In the garden I visited, the rocks and water occupied a large part of the space. They are important elements for traditional Chinese gardens.

Chinese loved and revered mountains almost in a form of “Worship” (Keswick, 1978:155). Mountains were imbued with supernatural power in ancient times in China. Five holy mountains, which are Mount Tai, Mount Hua, Mount Song, Mount Heng, and Mount Heng, symbolize the center of the earth and its four corners. Furthermore, the Chinese immortals were thought to live in the Mount Kunlun or on magical islands in the eastern sea (ibid.). This could be the start of the stone-loving tradition. I remembered that my parents loved collecting different small rocks from different places. My mother even selected small rock to match each of her plants by placing the rock in the pot next to the plant (Figure 4-18). Also, in my father’s ink and water paintings, he often painted rocks and mountains.

Figure 4-18.
My mother’s rock collection.

4.3.2 White walls and grey tiles rooftop

> "*After rocks and water, the wall plays the most critical role in the garden, for it is not only the most common device for separating different areas, but also provides calm and harmony, serving as a backdrop for the vibrating shadows and silhouettes of bamboo or plum trees." (Keswick, 1978:134)*

According to the garden manual Yuanye (Ji, 1631), the white walls in the garden were made of "earth stamped between boards", and then plastered. Some people would apply white wax to the walls to achieve a slightly glossy surface, so that the wall would have different effects during the day in varying day light conditions.

The open doors and windows in the walls are quite unique in Chinese gardens. They are presented in different shapes and sizes: square, oblong, round, oval, octagonal, hexagonal, case-shaped, banana-leaf shaped, flower-shaped, fan-shaped, and so on (Hu, 1991:93). Figure 4-19 shows a flower-shaped window. These "empty" windows not only allow the light and breeze to entre, but also offer beautiful scenes. The scene people see from the window is also thoughtfully arranged by the garden designer, for instance, a column of stones, bamboo dancing in the wind or a pavilion hidden behind a hill. Figure 4-20 shows one example.

The grey tiles are another important element in Chinese gardens. Figure 4-21 shows the typical roof top surface. It has a very rich texture. The roof top is made from one tile module. In the garden, this tile was also used in many different ways aside from on the roof top. Figure 4-22 demonstrates how it is used as a window structure and figure 4-23 shows how it is used for ground.

Figure 4-19.
A flower-shaped window.

Figure 4-20.
The scene from the window.

Figure 4-21.
The rooftop with tiles.

Figure 4-22.
The window with tiles.

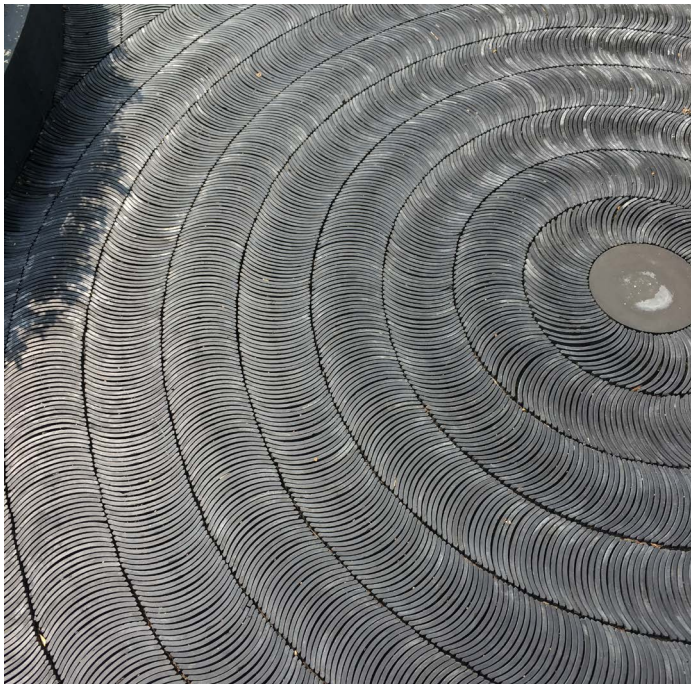

Figure 4-23.
The ground with tiles.

4.3.3 Flowers, Trees and Herbs

Due to geographical reasons, China owns the astonishing wealth of its plant life (Keswick, 1978:175). Plants occupied large areas in the Chinese garden, and they are definitely the most important elements in the garden. During my garden trip, I could see different plants everywhere: in the entrance, near the water, in the corners of the room. Also, the paintings on the wall were all about plants. In Chinese history, plants were valued as symbols of ideas, moral qualities, and emotional states (Keswick, 1978:176). Certain plants were favored in the garden and by Chinese painters due to its form. These flowers and trees are the sources of people's feelings and aspirations.

There are four plants favored and appearing a lot in traditional Chinese gardens. These four plants are the plum blossom, the orchid, the bamboo and the chrysanthemum. The four plants are called the Four Noble Ones in Chinese art. They are favored by lots of Chinese artists including my father. Hanging in my parents' living room in China, are four paintings of these four plants painted by my father (Figure 4-24). Since I was a kid, my father told me the symbolic meanings behind each plant. The plum tree blossoms during the cold winter. It symbolizes the perseverance against harsh conditions. For the orchid, because of the never overpowering fragrance and the simple form, it symbolizes the humility and nobility. The chrysanthemum blooms until the end of the cold autumn just before the winter, and it symbolizes the virtue to withstand all adversities. The stalk of the bamboo is hollow and flexible, which leads its symbolization to tolerance, integrity, and virtue.

Similar to the way people appreciate the plum blossom, the orchid, the bamboo and the chrysanthemum as the four noble ones, three friends of winter: the pine, the plum and the bamboo are favored by lots of Chinese artists and appear a lot in Chinese gardens.

> *"Aged pines, gaunt and bent with the struggle to survive, were splendidly analogous with virtue triumphant. Bamboos, bending in the wind but never breaking, were a Confucian symbol of the true gentlemen. Both are evergreen, and together with the lovely blossoms of the Japanese apricot, which blooms on withered old branches even in the snow, they made up the celebrated "three friends of winter"." (Keswick, 1978:177)*

The lotus flower is another popular plant in the Chinese garden. It is the source of virtuous inspiration to a noble one. My father loves painting the lotus flower and he even named his studio lotus. The famous poet from eleventh century, Chou Tun-yi (n.d./1985), had written the famous poem about the Lotus flower:

“It emerges from muddy dirt but is not contaminated; it reposes modestly above the clear water; hollow inside and straight outside, its stems do not struggle or branch. Its subtle perfume pervades the air far and wide. Resting there with its radiant purity, the lotus is something to be appreciated from a distance, not profaned by intimate approach.” (Chou, n.d./1985)

The garden designers arrange the plants in the garden in many different ways. The flowers could be arranged by seasons to ensure flower blossom during all the four seasons in the garden: the peonies, peach and cherry blossoms in spring; Wisteria, roses of multiple varieties and the lotus in Summer; the chrysanthemums in the Autumn and the plum blossom in the winter (Rinaldi, 2011:100). The arrangement of different plants is sought through juxtaposition of different shapes, leaf types, and colors (ibid.). The way the stems move and the sounds the leaves produce are also considered as elements of the composition (ibid.).

Figure 4-24.
Paintings by my father.

4.3.4 Lang (the gallery)

Walking in the Chinese garden, people always see the roofed and open-sided gallery either following the lines of the wall, or sometimes breaking free across the intervening spaces. These long galleries are the veins of the garden, connecting different pavilions and gateways (Keswick, 1978:140). It also divides the space like a screen. In the garden manual Yuanye (Ji, 1631), it was written that “Lang, the long gallery should never be missing from any gardens”.

The long gallery is built either on land or above water. Figure 4-25 shows one Lang built along water. The double gallery is often seen in the gardens in Suzhou. It is divided by the wall in the middle with windows, to allow people to walk on both sides of the gallery. In the garden I visited, I just followed the long gallery, and it walked me through the garden “in one breath”. It allowed people to enjoy the garden in different weather conditions, as the eighteenth-century writer Yuan Mei said, “the long galley connect up with each other so that if there is thunder, and lighting with wind, there is still no need to stop walking” (Keswick, 1978:140).

Figure 4-25.
The gallery in Guo Zhuang, Hangzhou.

Chapter 5

Design process - Fabric

5.1 Material & structure exploration

The very beginning of the design process was all about working on the loom, playing with the material and structure intuitively, without thinking about the design task too much. It was like a “warming up” process. By touching the material, combining the material intuitively, pressing the peddles, inserting the shuttles, it unwrapped the different material and structure possibilities. It built up a tiny swatch library. In this section, the most promising swatches are documented.

Swatch 1

This swatch is a test of rib weave structure. In this structure, two warp ends were combined as one, which allowed the thinner weft threads to pack tightly together with each other. This vertical stripe comes from weaving with dark and light-colored wefts alternately. Furthermore, two colored weft threads were used for the dark brown rib: one black thread and one brown thread alternately. These two threads can only be seen when inspected closely.

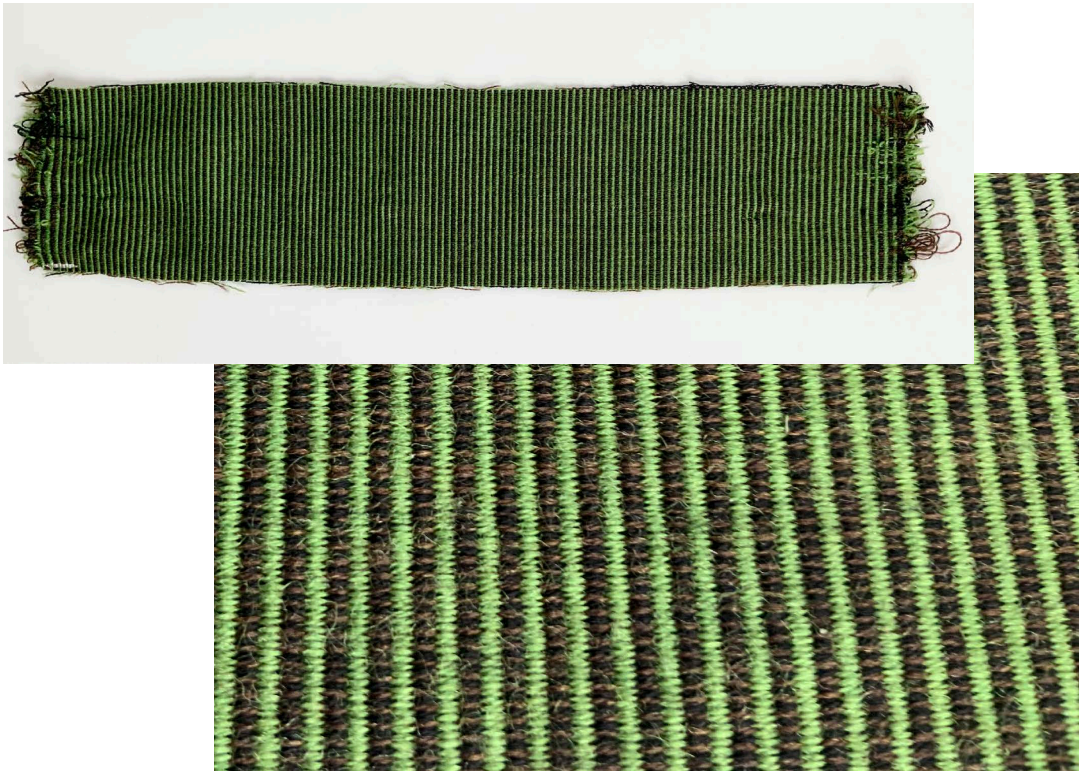

Figure 5-1.

Swatch 2

This swatch was very much inspired by one detail of the fabric woven by my cousin. The wavy stripe part, as shown in figure 5-2 a, was called “water wave” stripe by her and other weavers in the local weaving shop in my hometown. The two weft picks of the same colour were followed by two picks of another colour. It is a simple and fascinating way of creating stripes by combing the structure with color. In my swatch, the same idea was used for creating the stripes. Since the water wave effect could be achieved only with similar thickness of warp and weft materials, in my swatch, I combined several yarns in one to create the weft material that is of similar thickness to the warp.

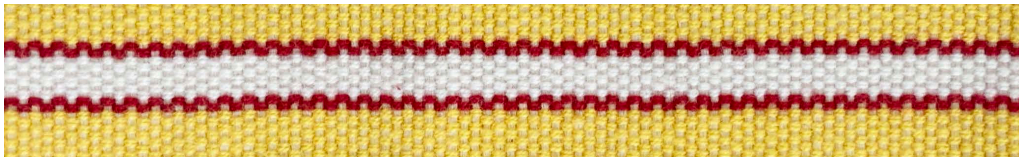

Figure 5-2 a.

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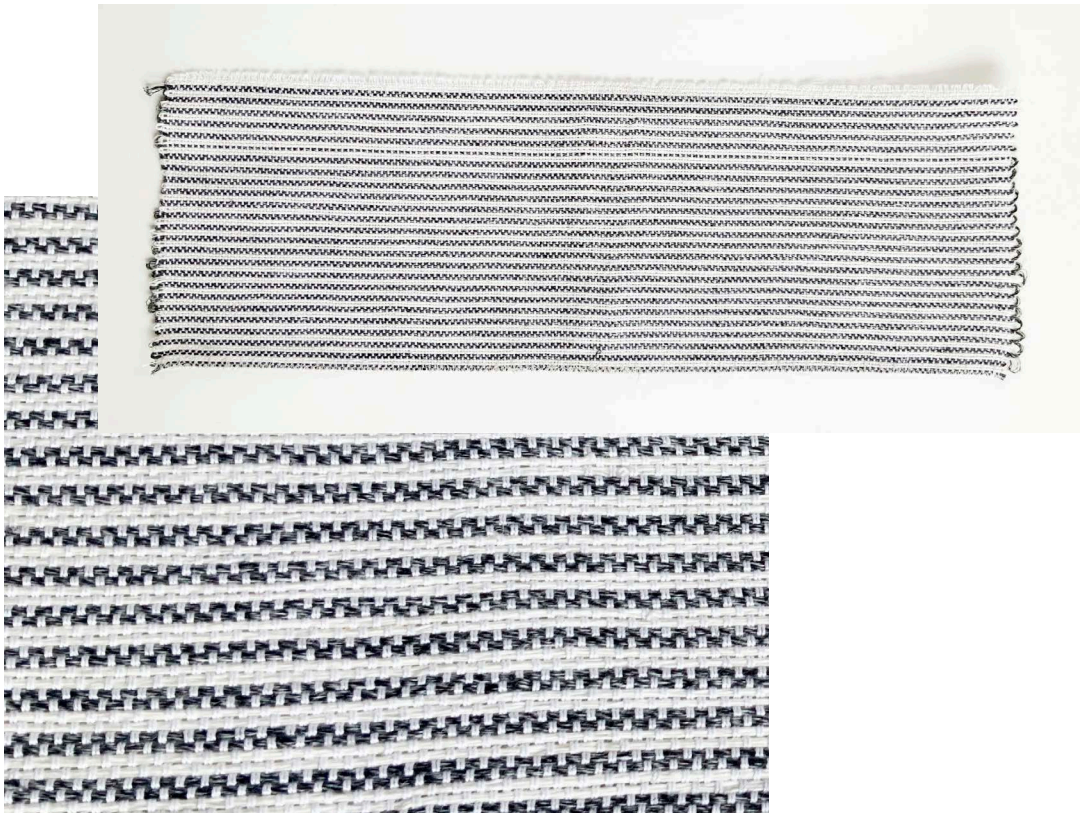

Figure 5-2 b.

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Swatch 3

In this swatch, two different colored weft picks were woven alternately in plain weave structure. Together with the white warp, the swatch consisted of three different colored pixels repeating all over.

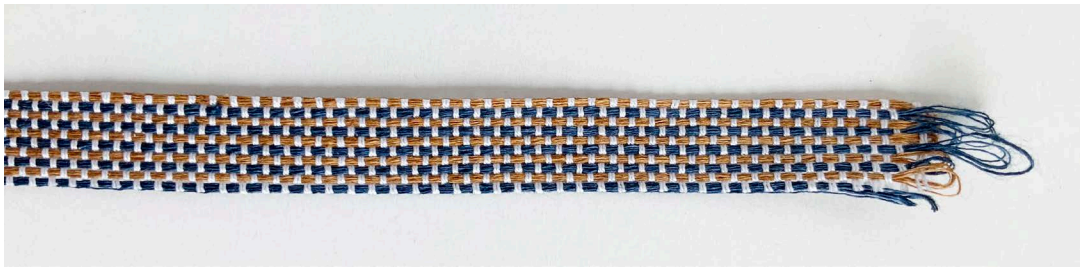

Figure 5-3.

Swatch 4

Swatch 4 is a further development from the sample 3. The weft with a similar colour as the warp visually blends in with the warp, thus visually disappears. It resulted in popping out the other colored weft picks. The tiny dashed line surface was created.

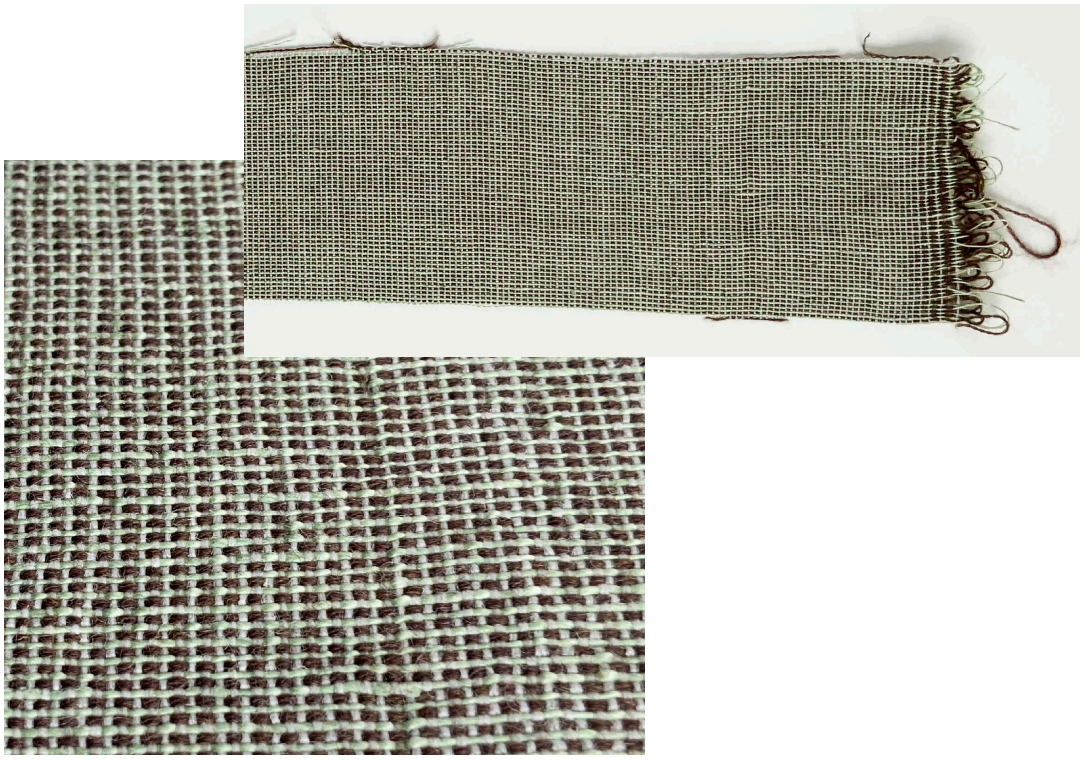

Figure 5-4.

Swatch 5

The vertical stripes in this swatch are the results of weaving the same color but different thicknesses picks alternately. The first thick pick consisted of seven threads as one. The second thin pick consisted of just one thread. By weaving them in plain weave structure, the thin pick became invisible, and the thick pick and every other warp end dominated the look, resulting in the vertical stripes.

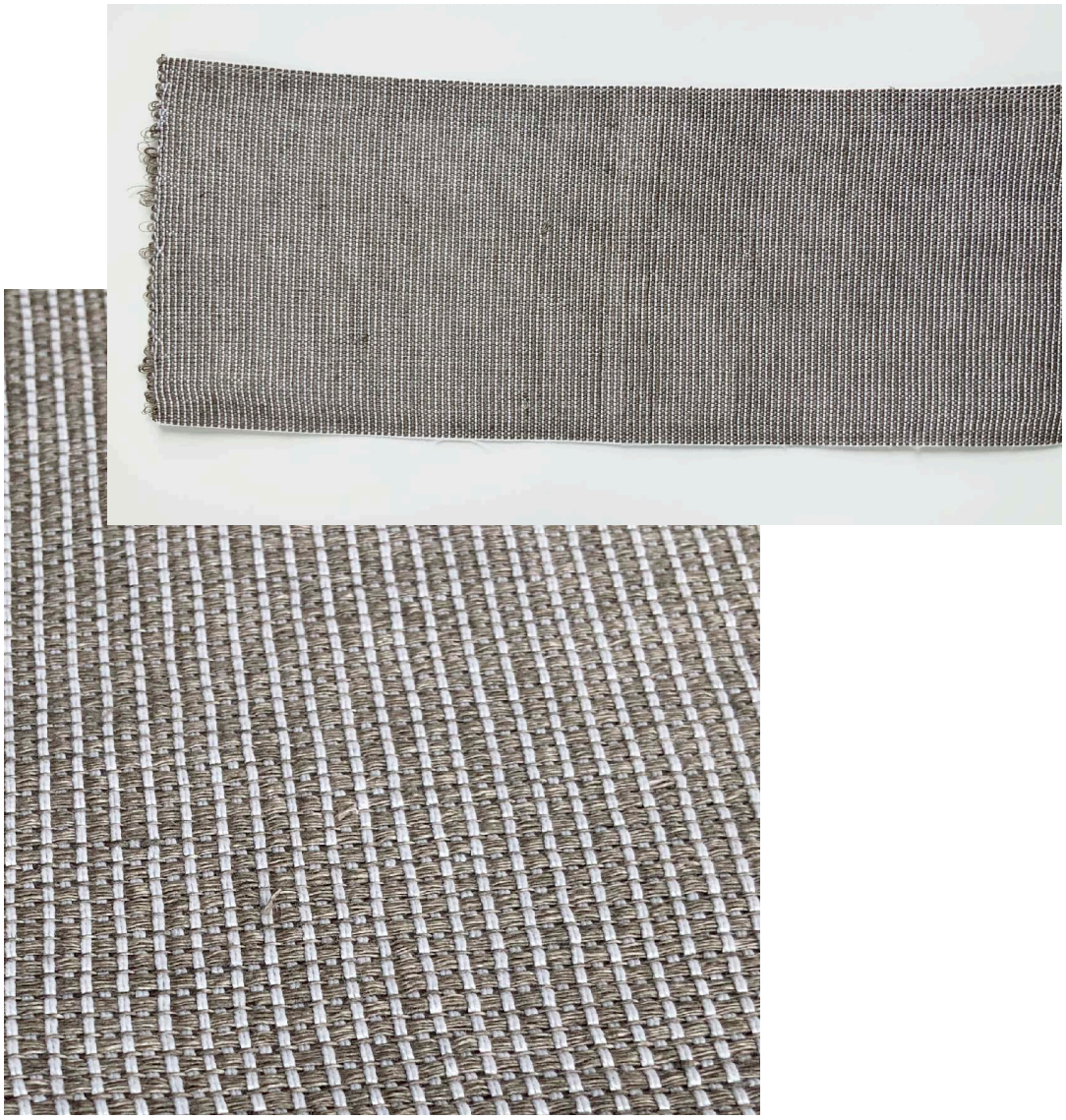

Figure 5-5.

Swatch 6

Swatch 6 consists of three different types of stripes. The first and third horizontal stripes from the top are different variations of basket weave, which is a modification of plain weave “in which two or more adjacent warp and filling threads are raised and lowered together as if they were a single thread” (Oelsner, 1915:43). The warp in the first horizontal stripe from the top combines two threads as one, and the weft combines eight threads as one. In the third horizontal stripe from the top, four warp threads were combined as one, while eight weft threads were combined as one. The second horizontal stripe from the top used the same idea as in previous Swatch 5.

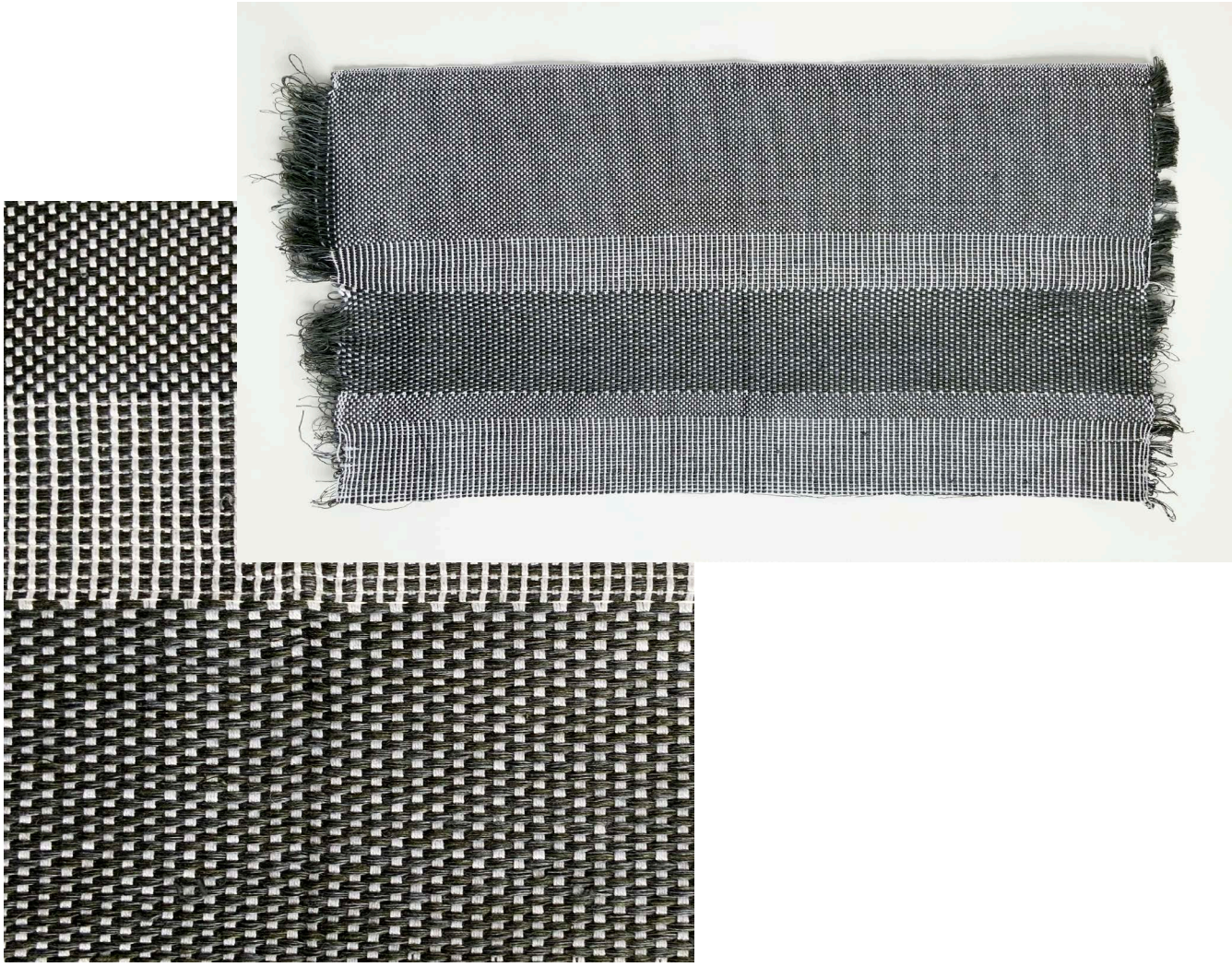

Figure 5-6.

Swatch 7

This swatch is inspired by the fabric woven by my cousin. I wove stripes of different widths with different weft colours.

Figure 5-7.

Swatch 8

During the process, I got inspired by the natural dye method. In this swatch, the weft threads were dyed in 3 different types of tea. Afterward, they were organized and woven in the loom according to the shades. Even though the natural dye method was not used after, it opened up one possibility for the future continuation and development, therefore, I kept this swatch in this section.

Figure 5-8.

After the exploration, with the small library built, I continued to the design task. The mood board of the textile collection which reflects the Chinese garden scene will be shown in the next section.

5.2 Textile collection Mood board – a virtual garden

During the Chinese garden field trip to Suzhou, I could not stop thinking about living in one of those gardens. I imagined how much I would appreciate the plants, the pond, and the peaceful simple everyday life there. After the trip, time after time, some memories about the garden faded away, while some became clearer. In my mind, I walked back to those gardens now and then, sitting in the long gallery next to the pond, wandering around. An imaginary garden generated, where I have never been before, but was familiar with. Perhaps the gardens I visited in Suzhou collapsed into pieces, then those pieces were combined. I visualized this garden with the picture I took from the field trip. It consisted of water, long gallery, white wall, tiled rooftop, and golden bamboo. Then I drew this garden on paper with stripes.

In this garden, the long gallery will be the path you follow. It guides you through the garden. The long gallery turns and hides between the trees and plants. You do not know how the path will be, neither where the gallery will guide you. During your walk in the garden, you will see lots of golden bamboos swaying in the wind, the deep green water with the reflection of the plants and trees near the pond, some birds standing on the tiled rooftop, and then the wall of the garden, with other walls behind. You continued walking...

Figure 5-9.
Mood board.

5.3 Color and Material

This section demonstrates the color and material design process. For woven fabric, many factors determine the final results: the color and material of the weft and warp; the woven structure; as well as the weft and warp density. In this section, those factors will be discussed and documented.

5.3.1 The warp

In the weaving shop in my hometown, a striped warp in different colours was set up in each loom. While weaving, the weavers in the shop only use white weft yarn. Since they need to weave very long fabric, by using the warp stripe and only one weft thread, it speeds up the weaving process.

However, for the prototyping process in this thesis project, it is the other way around. The stripe comes from the weft. By setting up the white warp and selecting different weft threads, it gave me more possibilities to test different stripe ideas. Instead of setting up several different warps, only one warp was be needed, and all the final striped fabrics were woven from the same loom. Since only a few meters of fabric was needed for prototyping, changing the weft threads for generating stripes would not be problematic. For future production, then it would be a good idea to use the same method as in the local weaving shop in my hometown.

The warp in this project functions as a canvas. Different weft stripes would be interwoven to this canvas. The inspiration and reference of the color and material choice came from the paper my father used for water and ink painting and the white wall in the Chinese garden. The way my father painted on the paper (Figure 5-10) resonated with the way weft interwove with warp: the ink went through and “interwove” with the paper. The figure 5-11 shows the picture of this paper my father used, it is soft and has a warm natural white tone. On the other hand, the white wall in the gardens, which functions as a background canvas for the plants, also has this sensorial property, especially the old walls which obtain the marks from sunshine and rain. Following these inspirations and references, the undyed cotton yarn, which showed the natural color of cotton, was selected for the final prototyping. It is soft, natural and warm, it has the property of “absorbing” and will balance well with the weft.

The warp density is one of the important factors that define the final appearance of the fabric. To test different warp densities, I made a cardboard loom (Figure 5-12). By simply wrapping the threads around the cardboard, different warp densities were tested (Figure 5-13).

Figure 5-10.
My father was painting on the paper.

Figure 5-11.
The paper from my father and the selected warp threads.

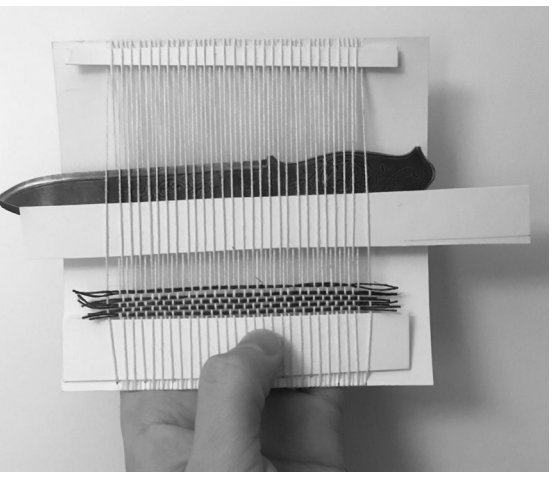

Figure 5-12.
The cardboard loom.

Figure 5-13.
Different warp densities were tested.

5.3.2 The weft

The color and material of the weft yarns are very important for the final appearance, tactility, and quality of the fabrics. I selected the material in the beginning and then the color.

Linen was chosen as the weft material. Linen tackles lots of natural elements in the gardens: the trees, the plants, and the wooden structure of the architecture. Also, linen yarns balance the soft cotton warp and enhance the stiffness of the woven fabric for the accessory development, finally, linen for a natural fiber is very strong and durable.

After linen was chosen as the weft material, I started to check the color swatches (Figure 5-14) from the linen yarn manufactures and selected color from there. Additionally, different weft color was also tested on this cardboard loom. The final color inspiration and references came from the elements of the Chinese garden: the tiles, the pillars, the water, the bamboo, and the walls. Each color represents one element, and they are documented in the following sections.

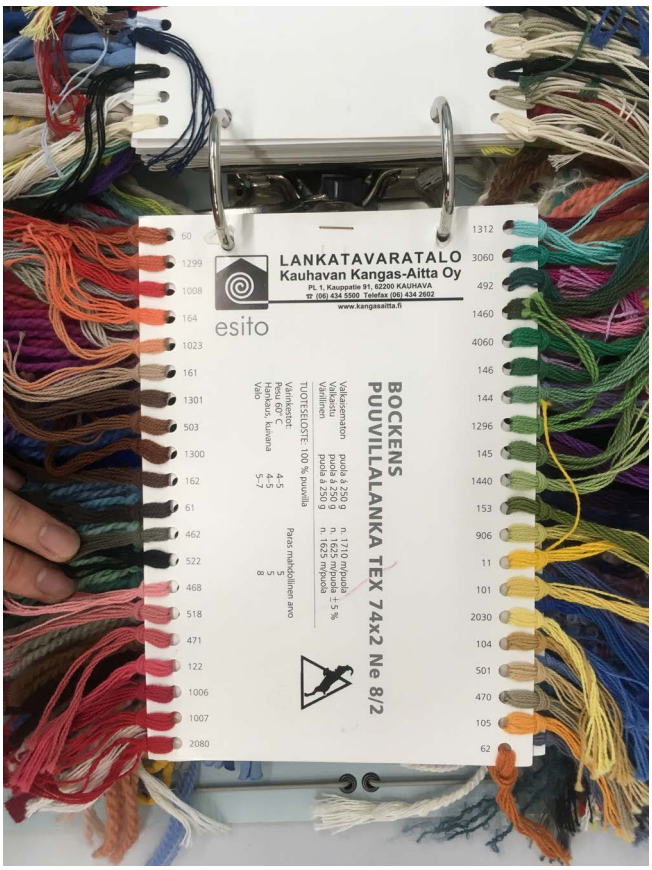

Figure 5-14.
Selecting weft color.

Figure 5-15.
Weft color selection for the tiles.

5.3.2.1 The tiles

I collected some broken pieces of the grey tiles during the trip (Figure 5-15), and they were the inspiration and reference for choosing the color. In the garden, the tiles could be seen from the rooftop to the frame of the door and window, and the floor. Each of the tiles had a different shade of grey, therefore generated a fascinating rich textured surface. Some moss and grass grew between the tiles after rain, it introduced a green accent color to the surface. In autumn, with all the leaves lying between, it became warm and soft.

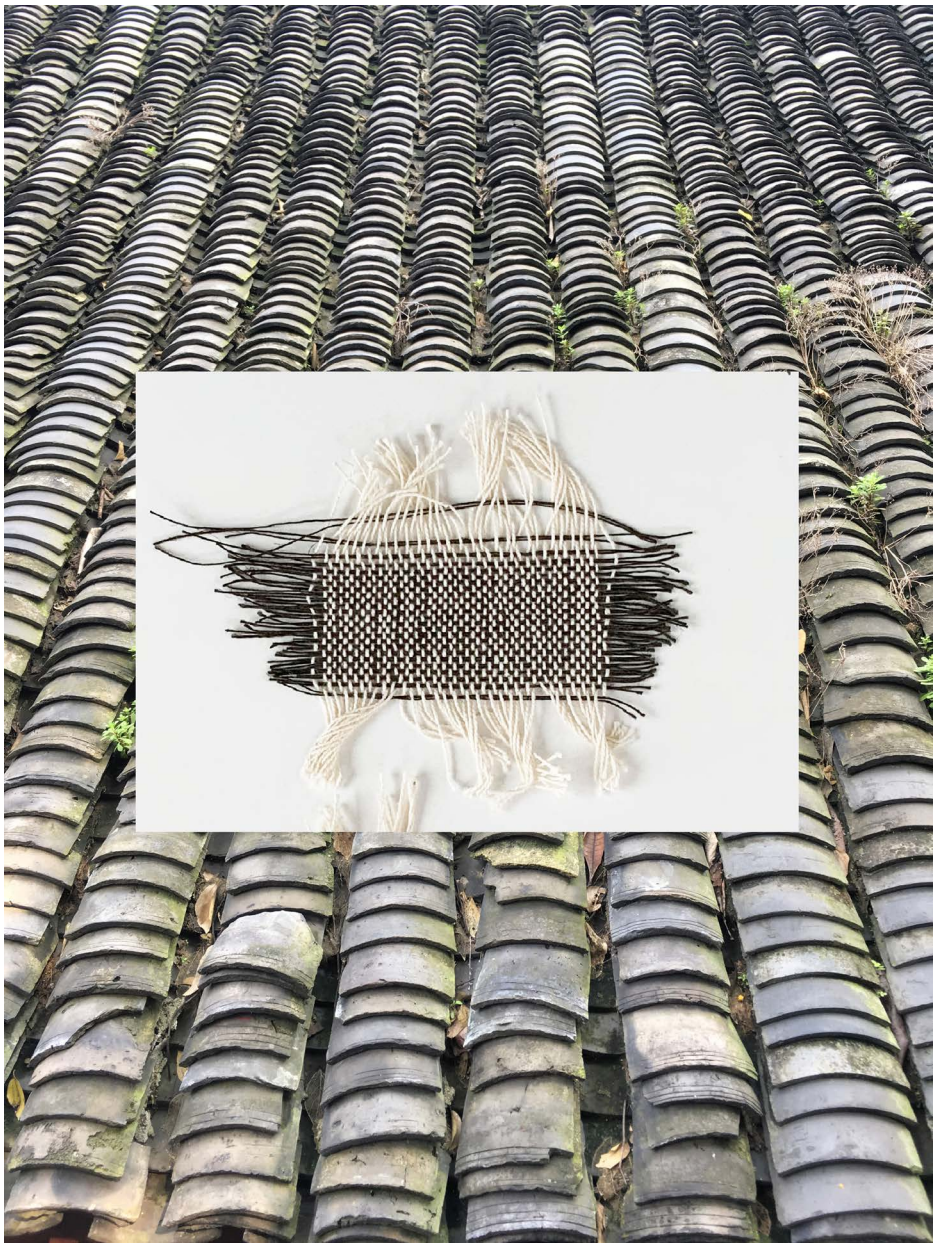

Figure 5-16.
The rooftop and the swatch.

Figure 5-16.
Weft color selection for the pillars.

5.3.2.2 The pillars

The brown-red linen (Figure 5-16) reflected the pillars of the long gallery in the garden. The color of the threads resonated with the newly painted pillars (Figure 5-17). The tested woven piece demonstrated the color combination of the warp and the weft. It reflected the color of the pillar through time (Figure 5-18), bit saturated and lighter.

Figure 5-17.
The newly painted pillars.

Figure 5-18.
The pillars through time.

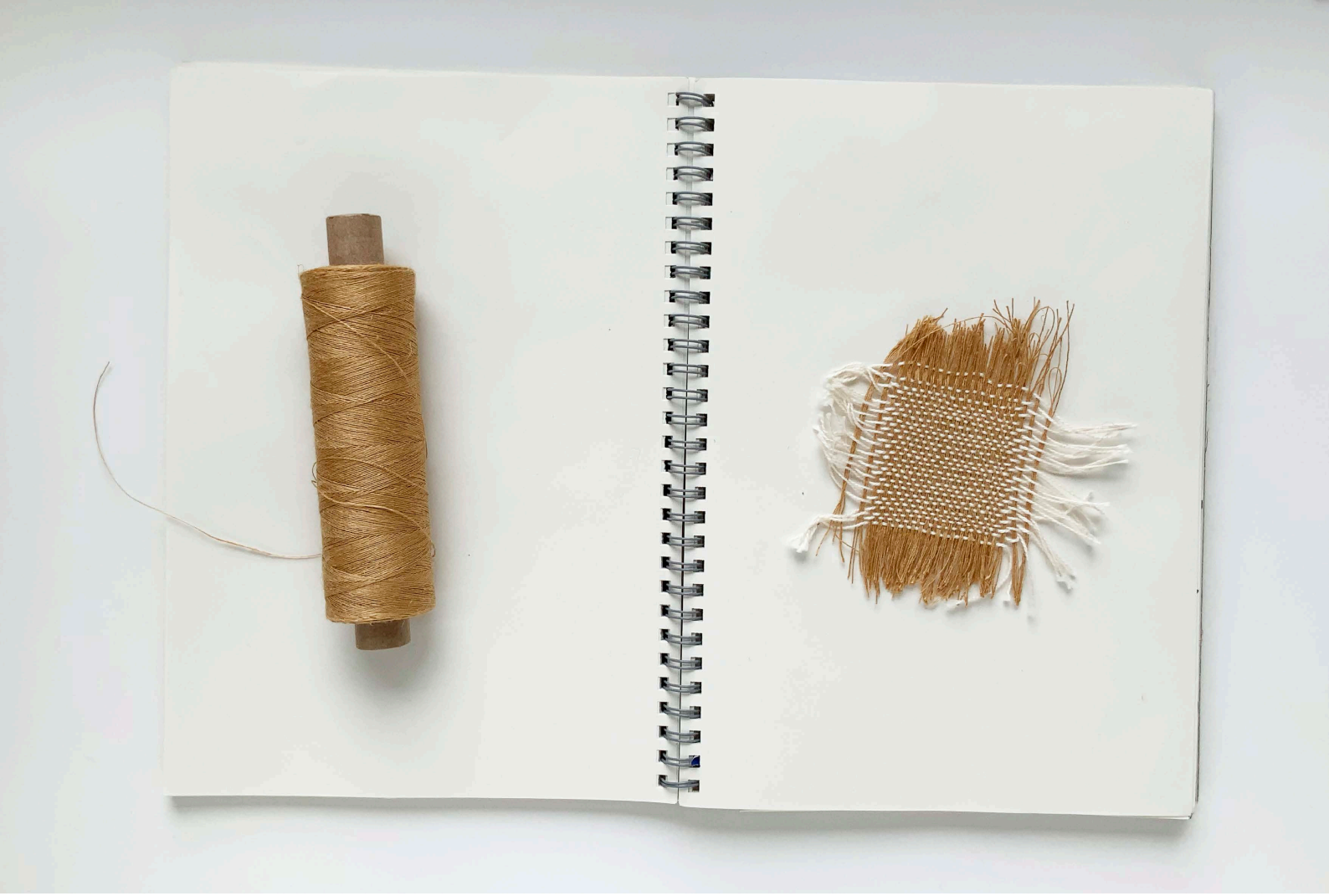

Figure 5-19.
Weft color selection for the bamboo.

5.3.2.3 The bamboo

The color reference was the golden bamboo I encountered during the field trip. In the test swatch, the white warp and the gold weft interwove in plain weave structure, and this resonates with the bamboo structure (Figure 5-20). Each gold weft resembles one bamboo and the white warp break it into several parts, just like the bamboo. This was not planed during the test, since it was just for testing the color, but it was a nice surprise.

Figure 5-20.
The swatch and the bamboo.

Figure 5-21.
Weft color selection for the water.

5.3.2.4 The water

One thing I enjoyed a lot during the field trip was sitting beside the water and observing the reflections of plants and trees on the water's surface. All the greenery reflected on the peaceful pond's surface brought this deep green color to the water, and this was the inspiration and reference for the color of water. It is rather the color of the plants and trees in the garden!

5.3.2.5 The walls

This half-bleached linen represents the color and tactility of the wall in the gardens. It is rough but smooth. The half-bleached linen yarn had the warm tone, just as the wall brushed by rain after time. The shiny detail of the linen also represented the wall under the sunlight, illuminating and reflecting more light to the garden.

Figure 5-22.
Weft color selection for the wall.

5.4. Rhythm of the stripes

The rhythm of the stripes was inspired by the elements in the garden: the rooftop, the long gallery, the bamboo, the water, and the wall. The initial idea of each stripe appeared while making the mood board. The mood board presented the virtual garden; consisted of different elements from the traditional Chinese garden during the field trip. The stripes in the mood board was the result of viewing these elements from different perspectives and distances.

For testing and developing the rhythm of the stripes, the following tools and methods were used: the desired woven structures were scanned from the swatches made during the material exploration process and then transferred to the computer; the striped fabric look, which was filled with the scanned woven structure, was visualized through computer aided design software; These striped fabric imitations were printed out on paper through digital printer; To adjust the rhythms, the paper was cut by scissors and adhered with a glue stick.

Figure 5-23.
Testing the rhythm.

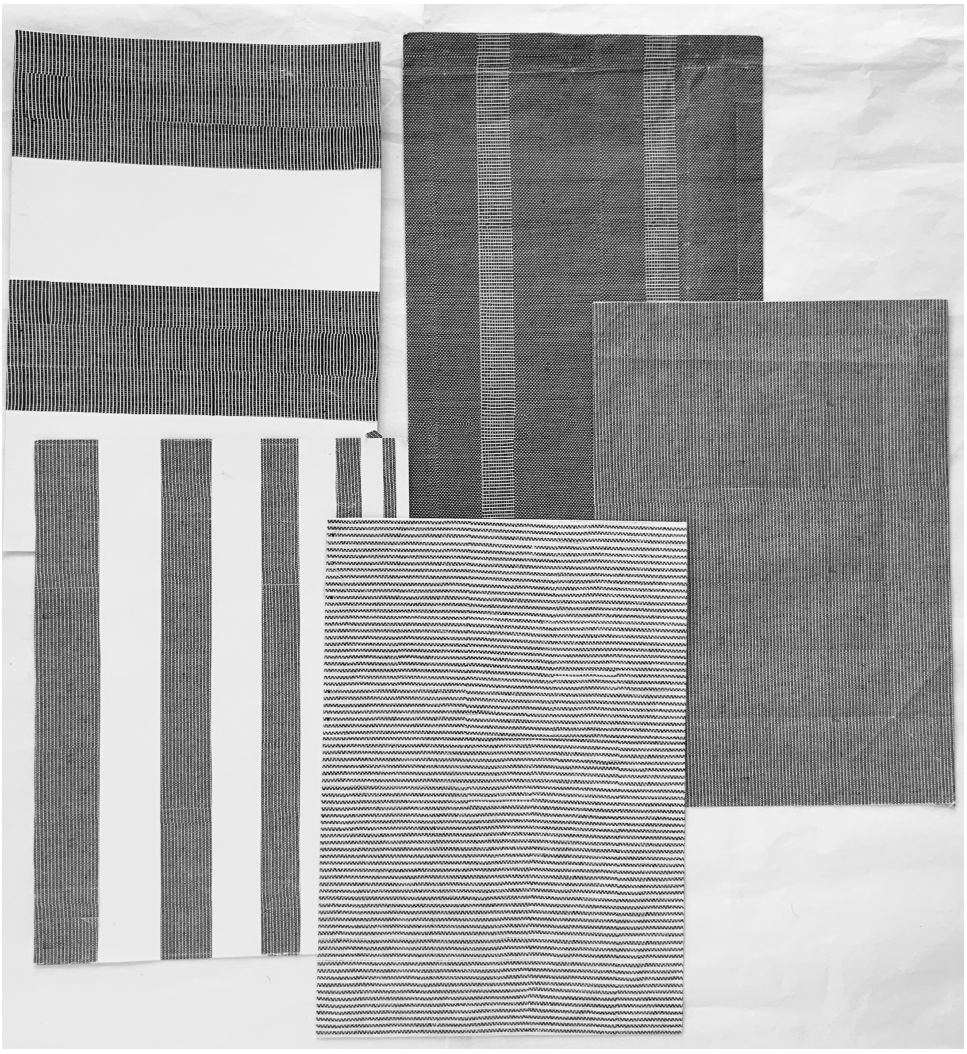

Figure 5-24.
Stripes and mood board.

5.5. Weaving on the loom and final collection presentation

The final textile collection was made in the weaving studio in Aalto University. Figure 5-25, figure 5-26 and figure 5-27 shows the process of making the warp, setting up the warp on the loom and the actual weaving process. The following figures demonstrates the final textile collection.

Figure 5-25.
Making the warp.

Figure 5-26.
Setting up the warp.

Figure 5-27.
Weaving on the loom.

Figure 5-28.
The tiles.

Figure 5-29.
The bamboo.

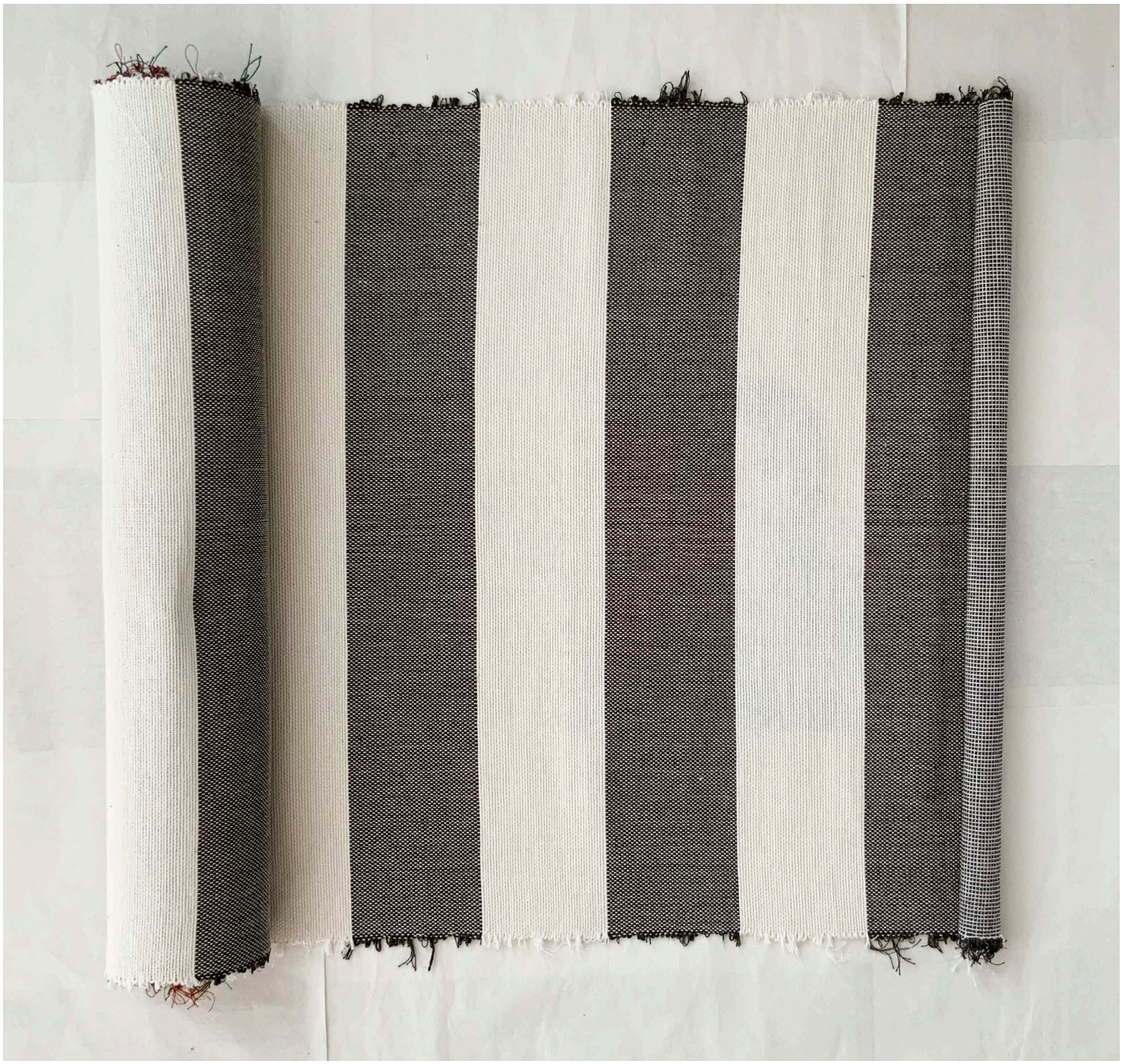

Figure 5-30.
The walls.

Figure 5-31.
The water.

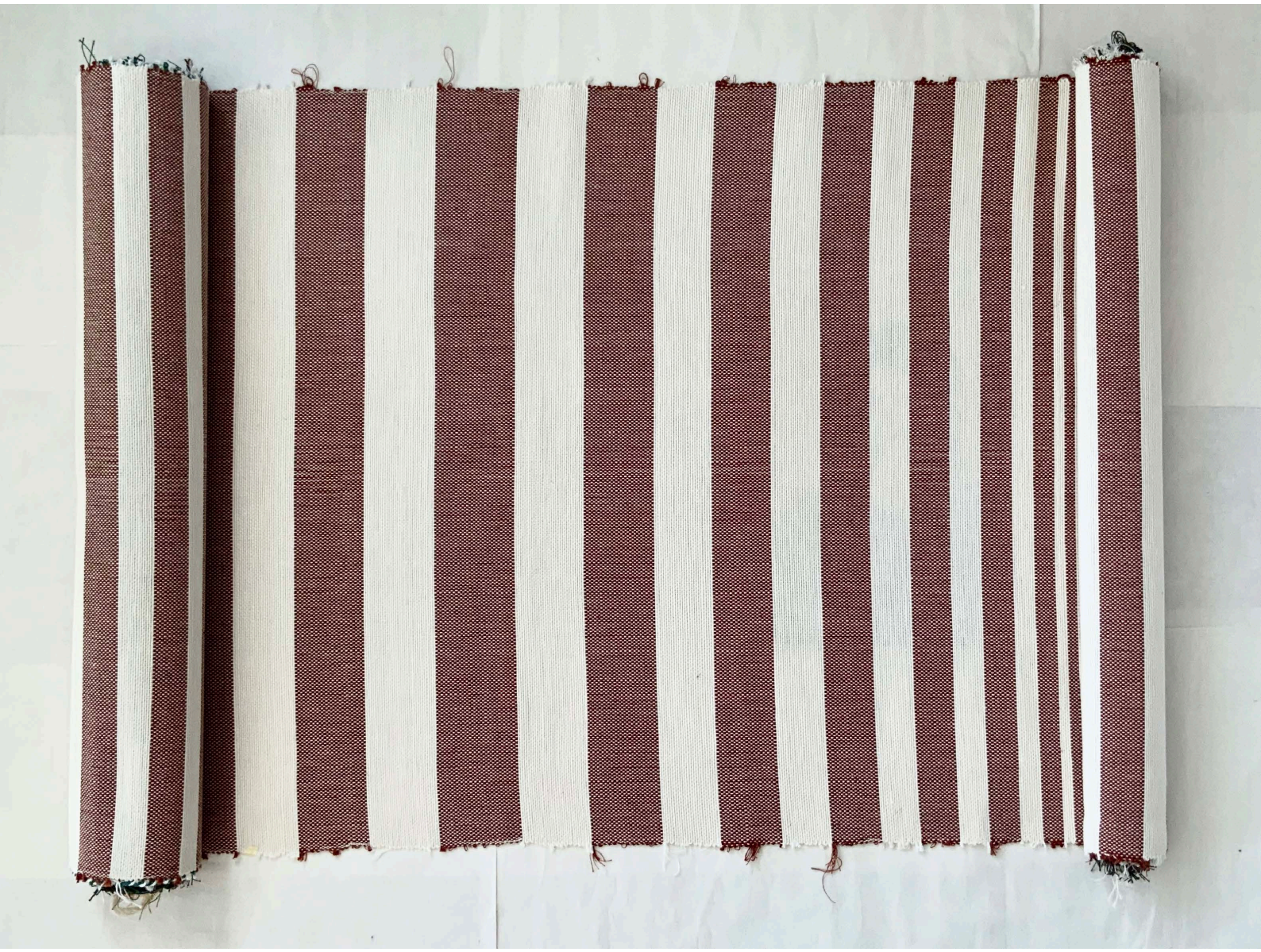

Figure 5-32.
The pillars.

Figure 5-33.
The textile collection.

Chapter 6

Design process - Form

6.1. Inspiration

The accessory collection aims to address the problem of the fast mass production. The fast-produced bags from the local shop I encountered during my trip to China, as mentioned in chapter 2, are the initial inspiration. Starting from there, different shopping bags were observed and collected. Figure 5-34 shows one page from my process diary where I collected all of the images.

Figure 5-34.
One page from the process diary.

These bags shared some similar qualities: Firstly, they were all constructed with the fundamental structure based on functionality. This is due to the need for low cost manufacturing. However, this left the most essential structure of a bag. No decoration. No extra parts. Secondly, all those bags are anonymous. One can find these bags all over the world, carried by different people. These shopping bags belong to everyone.

All these bags can be separated into two parts: vessel and handle. The vessel parts serve the needs of holding things together, while the handle build the connection between the vessel and the human body. Based on this essential structure, the following five bags were selected as the reference for prototyping the accessory collection.

Figure 5-35.
Reference for prototyping.

6.2. making process and the accessory collection presentation

The first part of this section shows the making process of the accessory collection. The vessel part of the bag was made from the woven fabric collection. To make the handles, I used the backstrap loom to weave webbings. The color of the webbings kept the same color story as in chapter 5.3.1. At the end of this section, the accessory collection will be presented. This process happened during the same period as COVID-19 pandemic, so everything in this section was conducted at home.

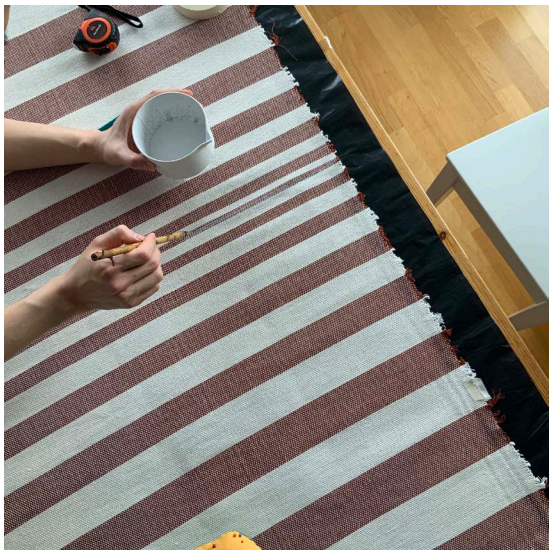

Figure 5-36.
Gluing the edge of the fabric before cutting.

Figure 5-37.
Constructing the bag.

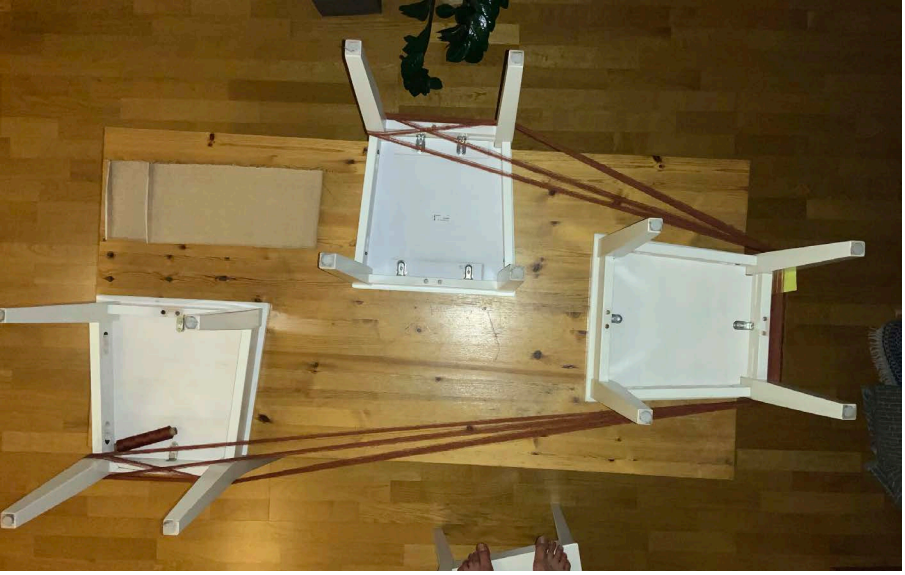

Figure 5-38.
Making the warp with chairs.

Figure 5-39.
Weaving the webbing.

Figure 5-40.
Detail of the webbing.

Figure 5-41.
The webbings.

Figure 5-42.
Bag 1.

Figure 5-43.
Bag 2.

Figure 5-44.
Bag 3.

Figure 5-45.
Bag 4.

Figure 5-46.
Bag 5.

Figure 5-47.
The accessory collection.

Chapter 7

Conclusion

This thesis project questions the speed of our current life and the responsibility and role of a designer in this fast world. Through the textile and accessory design practice, it addresses the importance of craftsmanship in design; it provides one idea for slowing down the fast fashion industry.

The traditional Chinese garden and the hand weaving technique were researched and reflected through the woven textile collection. This textile collection demonstrated the slow life in the Chinese garden, as well as the balanced scenes between nature and humans. Furthermore, the textiles were applied to an accessory collection, which was inspired by the fast-produced shopping bags. By combing the hand-woven textile with the mass-produced shopping bags, it brought up the discussion of speed up and slow down, as well as our shopping behavior. Hopefully, it will also evoke people to reconsider the speed of life and start to appreciate the slow making process. We have to consume less and change shopping habits. We need to consider carefully each purchasing decision and support more local products and crafts. During the thesis project, the COVID-19 pandemic hit the world, and everything had to slow down immediately. I see this as a message from nature to the human being, to our fast life. We need to slow down!

During the design process, I enjoyed all the hand weaving and slow making process. Hand weaving connected the material, color and hand. By touching the yarn, selecting the color, and weaving on the loom, it allowed me to test different ideas and learn from these ideas. Hand weaving was a time-consuming process, which gave me more time to think, to make decisions. Hand weaving also allowed me to test different materials and select the suitable ones for the final products. Furthermore, hand weaving was a self-cultivation process for me. Sitting in front of the loom, I could not be more myself. I hope this project will encourage more people to be interested in weaving and handwoven fabrics. The knowledge of weaving is known by fewer and fewer people, that is why weaving is so important today.

I am happy with the final results. The bags show the way how I vision the final outcome. The stripes tell the story of the virtual garden formed in my mind from the traditional Chinese gardens. For the future development of the project, the natural dye method could be explored. Since plants function as an important role in the Chinese garden, different plants from the garden could be tested and developed for the color pallet of the future products.

In the future, one possible production method for the bags could be achieved through collaboration with the local weavers in the weaving shop in my hometown. At the beginning of this project, I got very much inspired by the weaving shop and the weavers there. I chatted with some weavers in the shop. Most of them were local farmers and they came to this weaving shop during their spare time. The atmosphere in the weaving shop was

lovely. I had the idea of prototyping the final outcomes with my cousin and the weavers in the shop during the design process. However, the COVID-19 pandemic prohibited my trip to China for the collaboration. In the future, I would like to go back to the weaving shop to work together with the local weavers for the future production of the bags.

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Images

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